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*the magazine of the Royal Ontario Museum*

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# ROTUNDA

*the magazine of the Royal Ontario Museum*

*Volume 27, Number 2, Fall 1994*
*Date of Issue: August 1994*

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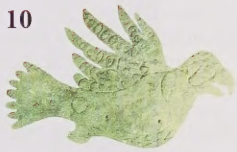

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# Editor's Note

It may be difficult to believe that *The Arabian Nights* is the common source of subject matter for many Persian miniature paintings, such as the one on the cover of this issue, and the Rimsky-Korsakov symphonic suite *Scheherazade*. The paintings are elegant, subtle, and quietly sensuous while the suite is a hedonistic extravaganza. What the paintings and opera exemplify, through their creators' interpretations of the tales, is the great differences of perception between eastern and western cultures. However, at the same time they also reveal exchanges of artistic ideas and styles. Lisa Golombek describes how the stories of *The Arabian Nights* inspired Persian poetry, which in turn was the direct inspiration for the miniatures, and then how the imagery and style of the miniatures changed through the introduction and influence of Western art.

A similar but less known cultural exchange took place in North America almost simultaneous with the Roman Empire. For more than a century archaeologists have been excavating and analysing the remains of the Hopewell peoples. These ancestors of Native Americans created mounds and geometric earthworks, often of enormous scale, in many locations across the continent. The materials and forms of the objects found at the sites and the territory on which sites occur indicate an impressive network of trade and sophistication of culture.

David Brose discusses the most fascinating aspect of the findings: the ways in which the objects may relate to the shapes and locations of the earthworks. The Hopewell peoples appear to have been primarily hunters and gatherers, with only rudimentary agricultural skills to keep them in a given place over a significant length of time, yet the objects and earthworks may relate to predictions of astronomical cycles, such as eclipses of the sun and the moon. Did these people look to the celestial bodies for power?

While some researchers may look to the heavens and try to imagine how the Hopewell peoples predicted eclipses, others are exploring the deepest oceans and fossil remains on rock formations in the Maritimes to question the origins of life. We know that all life depends on sunlight, right? Wrong. As Peter von Bitter explains, scientists have found animals thriving in environments completely untouched by the sun. They seem to obtain energy from sulphur and other chemicals, thereby living through chemosynthesis rather than photosynthesis. And judging by the fossil record, their ancestors and others may date back more than 330 million years.

Turning to the more intimate surroundings of a museum room vignette, it's obvious that the main reason for creating this type of exhibit is to put the objects in context for visitors. Beyond the placement of furniture, floor coverings, art, and decorative objects in a room display, flower arrangements are another way to add a note of realism. At the ROM, considerable thought and research go into the creation and placement of flowers. Elizabeth Elliott and Flavia Redelmeier offer insights into the whole process.

From learning about more of the mysteries of life to the workings of a museum, we hope you enjoy this issue of *Rotunda*.

Sandra Shaul

Sandra Shaul


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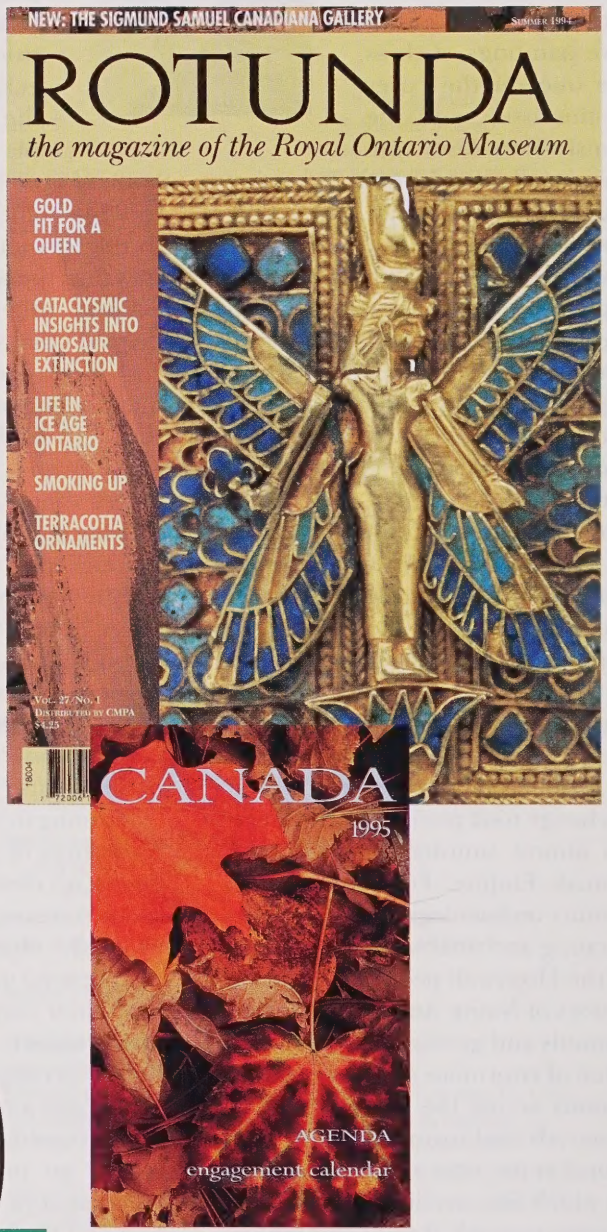


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*This Silurian trilobite, now in the ROM's collections, was described and named by John Jeremiah Bigsby (left).*

PHOTOGRAPH BY BRIAN BOYLE

**Silurian Trilobites with a Past**

THE ROM'S INVERTEBRATE PALAEONTOLOGY Department recently acquired five rare fossil trilobites with a long Ontario history.

The trilobites, named *Arctinurus boltoni*, are from the 410-million-year-old Rochester Shale, which outcrops in the Niagara Peninsula and adjacent parts of New York. They were excavated from a fossil quarry near Middleport, New York, by a professional collector, Ray Meyer. When Meyer offered the specimens to the ROM in 1992, they were unprepared and looked quite unprepossessing. He assured us that they would be spectacular, once restored. Because all known Ontario examples of *Arctinurus* are fragmentary and we wished to have some complete specimens in the ROM collection, we accepted the offer.

*Arctinurus boltoni* is a large, rather flat, ovate trilobite with large crescentic eyes, a distinctive scoop protruding from the front, and a central

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head shield divided into three prominent lobes. Its batlike tail has six trailing spines and its upper surface is covered with tiny pimples. When the shale is split to reveal the trilobites, these pimples are a problem because they cause the split to go through the fossil, rather than around it. As a consequence, parts of *Arctinurus* adhere to both part and counterpart. Restoration then requires the painstaking transfer of tiny to moderate-sized pieces of the trilobite skeleton from the counterpart to the part. Zarko Ljuboja, a fossil preparator from near Erie, Pennsylvania, did an exceptional restoration job on the five specimens now owned by the Museum.

What makes *Arctinurus boltoni* doubly significant to the ROM is the man who described and named it, John Jeremiah Bigsby. Bigsby named it *Paradoxus boltoni*, after its discoverer, Lieutenant Bolton of the Royal Engineers, who found it at Lockport, New York. Bigsby's description was read at the Academy of Natural Sciences in Philadelphia on 15 March 1825.

John Jeremiah Bigsby is an important figure in early geological exploration in central Canada. He came to Quebec in 1818 as medical officer to a large detachment of a German rifle regiment, then in service with the British Crown. In the spring of 1819, the colonial government sent Bigsby through Upper Canada to make a general report upon its geology, of which nothing was known. For this journey of almost 1250 kilometres, including passage to Sault Ste Marie in a Northwest Company light canoe, Bigsby was paid 26 pounds. It took all that summer.

In the following winter Bigsby was appointed British Secretary to the Boundary Commission. He was with the Boundary Commission schooner *Confiance* working along the "pestilential" shore of Lake St. Clair in 1821. Bigsby took his most extensive trip in 1823, starting in a clinker-built boat from Kingston to Toronto. Boat and baggage were transported by wagon up Yonge Street to Holland's Landing, launched down the Holland River to Lake Simcoe, portaged to the Nottawasaga River and then down to Lake Huron, and finally sailed up through the North Channel past Sault Ste Marie to Lake Superior. At Fort William two canoes, manned by six voyageurs each, took them by the Grand Portage along the old commercial route to the Lake of the Woods.

Of his Boundary work, Bigsby was proudest of his part in securing for Canada St. Joseph Island, the large island southeast of Sault Ste Marie. Two islands are named after him, one in the Lake of the Woods and the other in the North Channel of Lake Huron. He reported on rocks, minerals, and fossils from Central Canada and New York in 22 articles written on the geology of the area. Besides *Arctinurus boltoni*, important fossils collected by Bigsby include the first North American trilobite (from St. Joseph Island) to be given a name, the first known edrioasteroid (a limpetlike echinoderm) found in Ottawa in 1822, and the first known actinocerid nautiloid mollusc, found in 1820 on an island in the North Channel of Lake Huron.

Upon his return to Britain in 1825 after "the six most exciting years of my life," Bigsby established a prestigious gold medal (the Bigsby Medal) with the Geological Society of London to be presented biennially to students of "American geology" not older than 45 years of age, "not too old for further work and not too young to have done much." The medal has Bigsby's head on one side, and the fossil edrioasteroid found in Ottawa on the other.

We gratefully acknowledge support from the ROM Reproductions Fund of the ROM Foundation for making possible the purchase of these historic Silurian trilobites.

DESMOND COLLINS
*Desmond Collins is curator in charge of the Invertebrate Palaeontology Department, Royal Ontario Museum*

# *Crrunch*

AS A BOY IN THE EARLY 1950S, I LIVED in a downtown Toronto neighbourhood that contained paradise. I had, within shouting distance, three neighbourhood movie theatres. In those days, before television steamrolled movies, double bills ran for three days at a time. Although Sunday movies were forbidden—the clergy linked that prospect with the Fall of the Roman Empire—I could, in a good week of summer, take in a dozen movies. And even that figure could be increased by sitting through the children's matinee, hiding out in the washroom, and sneaking back for the grown-up movies.

I ate a lot of popcorn. Frankly it was usually better than the movies. Movies and popcorn established themselves as partners in the art of pleasuring. Popcorn became the last word in comfort food. I've been an unapologetic addict all my life.

If North Americans can hardly imagine movies without popcorn, others find it troublesome to imagine movies with it. The French think we are barbarians, while the British sniff at popcorn as an insult to the "cinemer" and complain about Romeo and Juliet or Macbeth expiring to a chorus of chomp, munch, *crrunch.*

The source of all this pleasure and displeasure is a simple physical reaction. There are five types of corn, but only one that pops. These kernels contain residual moisture. Heated to the boiling point, it vaporizes, expands, and boom—blows the kernel apart.

The less moisture, the smaller the explosion. This is the difference between ordinary and "gourmet" popping corns. The latter have a carefully controlled moisture content of 11 to 14 percent, guaranteeing a light, fluffy kernel with every pop.

It is believed corn was cultivated in Mexico and Central America as early as 6000 years ago. Fifty-six-hundred-year-old ears of popping corn have been found in bat caves in New Mexico.

The Aztecs used popcorn in ceremonial garlands and headdresses. Thousand-year-old popcorn kernels have been found in Inca tombs, treasures which ranked alongside gold and jewels. They are, astoundingly, still poppable today.

Probably, native peoples discovered popcorn inadvertently. The superstition was that a demon occu-

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pied each kernel and as the demon came closer to fire the angrier he became, until he exploded.

Eventually, popcorn became a staple. Methods of popping progressed from flinging the kernels on glowing coals to heating them on giant clay poppers more than two metres across.

Christopher Columbus introduced corn to Europe but, in a lamentable lapse of judgement, did not think popcorn worth the trouble of the voyage.

Popcorn stole the show at the first Thanksgiving in 1621, when Indian children tossed kernels into the fire and caught the popped corn in their hands. It has remained very much a passion of the Americas: Americans chomp their way through 15 billion quarts a year. Canadians likely match them on a per capita basis.

Lately, popcorn has been anointed culinarily correct. It has dietary fibre, few calories, and no cholesterol. Nutritionists, who find it painful to acknowledge food as anything more than fuel, suggest you eat it stark naked.

But any genuine aficionado knows that if it is to dance across the stations of the palate, popcorn needs a prompter. Put crudely, the salt needs something to stick to. Melted butter is traditional, but who needs the greasy fingers and demon cholesterol? Happily, there is a sane compromise between butter and nudity: Pop your corn in a light, healthy oil, canola or maybe peanut.

Movie theatres, both the big chains and repertory houses, are still, at this writing, using coconut oil, a cheap but profoundly unhealthy product (coconut oil is 92 percent saturated fat, compared to 66 percent for butter and 6 percent for canola) with nasty effects like those caused by MSG. This is changing. An outcry south of the border produced a dramatic drop in popcorn sales and forced the chains to right their evil ways. In Canada, Cineplex Odeon and Famous Players are starting to see the "lite" and experiment with sunflower and canola oils.

The marketing geniuses have had their way with popcorn. So we have Smartfood and Smart Snack in seductive foil bags. We have the yuppie popcorns of Kernels, whose 69 outlets across Canada proffer the likes of Irish mint, fruit cocktail, raspberry, dill pickle, and Cajun, to name but a few.

If you're going to fool around with popcorn, at least give it some dignity. I know a fine chef and popcorn addict who dallied with caviar, truffles, and foie gras by day, then came home nightly to pop her fix in a sensational meld of olive oil and chili flakes. Unfortunately, in a turn reminiscent of *Invasion of the Body Snatchers*, a nutritionist has taken over her person. My friend has renounced the big bang for a waistline thinner than a homeowner's wallet.

I am prepared to fork out for expensive but explosive kernels: Orville Redenbacher, for instance, claims to have spent 40 years working with 30,000 popcorn hybrids to come up with his bestseller. However, with the intention of preparing the precious kernels in a worthy manner, I was once gullible enough to buy a hot-air popper. The result, unless you drowned it in butter, tasted like packing chips.

Instead I use R.S.V.P.'s Perfect Popcorn Popper, a durable contraption manufactured in Seattle, which uses a modest amount of oil and comes fitted with a rotating lever and flip-top lid. It is available at specialty cookware stores and a bargain at any price.

When the corn is all perfectly popped, fluffy, radiant and redolent of corn, I salt it mercilessly. Then, while it is still hot to the touch, *crunch*, I lie back, close my eyes and let the movie roll in the theatre of my head, where they still make 'em like they used to.

JEREMY FERGUSON
*Jeremy Ferguson is a food and travel writer based in Toronto*

*Through careful restoration the wooden sculpture of the Madonna and Child has regained most of its original appearance*

# Restoring the Canadiana Gallery's Madonna and Child

HUNDREDS OF OBJECTS DESTINED FOR the Sigmund Samuel Canadiana Gallery received conservation treatment, which gave conservators an exceptional opportunity to learn more about the material history of the artifacts. During work on one of the more important pieces, the gallery's three-metre-high, late 18th-century sculpture of the Madonna and Child, it was learned that it was carved from numerous blocks of wood, then dowelled and pegged together, leaving its centre hollow. Over the decades various factors had modified the sculpture's appearance, and so research was needed to determine how it had originally looked.

Analysis showed that the sculpture had been repainted at least 13 times in various shades of white and grey. Wooden sculptures of that era were usually polychromed or gilded but according to the analysis this object was first coated in a uniform off-white colour. Before it was acquired by the ROM, the layers of paint had been roughly stripped away, leaving the current patchy surface.

Shrinkage of the sculpture's wood over the centuries has created gaps between most of the sections and weakened the joins. The spaces were filled at various times with many different materials, including plaster, wax, plastic wood, and even chewing gum. By the time the piece arrived at the Museum, the fills were loose and crumbling. Conservators secured the loose parts, removed and replaced the old fills and repaired the wooden sections. Missing fingers on the Child's left hand had been crudely repaired in the past. New fingers were carved in the appropriate size and style. All of the latest repairs were inpainted to match the surrounding areas. Although the sculpture is still unevenly coloured, ROM staff and visitors to the gallery now have a more accurate picture of the object's original appearance.

MARIANNE WEBB
*Marianne Webb is decorative arts conservator in the Conservation Department, Royal Ontario Museum*

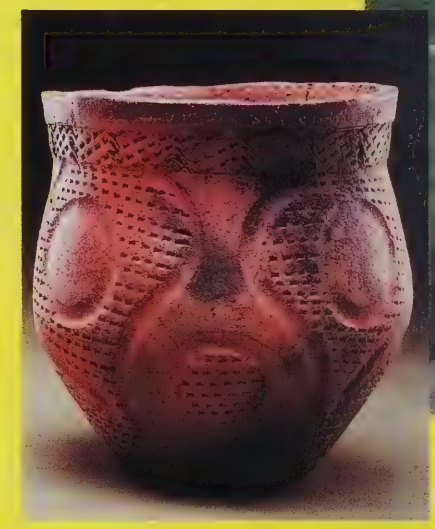
PHOTOGRAPHS BY BRIAN BOYLE

*The burial mounds scattered thinly across Ontario and Manitoba seem strangely out of place. If we stand on the north shore of Rice Lake, for example, and look at the ancient serpent resting quietly in its grove of oaks, our minds drift spontaneously to the south; for the serpent mound is an alien form—the only one of its kind in Canada—and its nearest relative, almost a quarter of a mile long, sits on a bluff overlooking a small stream in Adams County, Ohio.*
WALTER KENYON, *MOUNDS OF SACRED EARTH* (1986)

# EAST OF THE SUN AND WEST OF THE MOON

*Did ancient Indians create exotic artifacts and complex earthworks to gain power from the sun and the moon?*

DAVID S. BROSE



ABOUT 30 KILOMETRES (18 MILES) DOWNSTREAM FROM ONTARIO'S famed serpent mounds, on a small knoll overlooking the Trent River, the LeVesconte mound was eroding. The late Walter Kenyon, for many years an archaeologist at the Royal Ontario Museum, and his colleagues excavated this site more than a generation ago. They discovered that soil and rock had been placed over an area where prehistoric peoples had re-excavated burials and cremations from shallow pits. Other pits contained chisels of deer antler and beaver teeth, pins and daggers of deer bone, pendants of fossil shark teeth, and beads. Many beads were made of mollusc shells from nearby streams and lakes; a few beads were cut from the shells of whelks that lived in waters off the Gulf Coast; and some beads had been rolled from cut-and-hammered sheets of native Lake Superior copper. Sheets of copper and sheets of beaten silver from Sudbury or Cobalt, Ontario, had been wrapped around three-reed panpipes. In the pits below the LeVesconte mound there were also mirror-like sheets of mica from the summit of the Appalachians.

The artifacts made of non-local materials and the designs on tools

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**In this view of the Mound City group (c. 50 BC to AD 100), located in Chillicothe, Ohio, an earthen square and mounds are visible beneath a serene landscape. The break in the earthen wall marks the place where celestial observations were made. A copper-plate falcon effigy and a large mica hand were uncovered in the Mound City group. The ceramic pot (c.100 BC) comes from the Havana mound, Illinois. A diagram showing the geometric forms of the Newark earthworks forms the background to these pages and those that follow.**

COURTESY DAVID S. BROSE/COURTESY NATIONAL PARK SERVICE/ COURTESY UNIVERSITY OF ILLINOIS MUSEUM OF NATURAL HISTORY/COURTESY SMITHSONIAN INSTITUTION

and pottery revealed that the prehistoric peoples shared ceremonial images and ritual behaviour with hunting and gathering groups south and west of the Great Lakes. The first European visitors were puzzled by these structures. Most mounds were covered by very old trees and local Native Americans had no tradition of having built them. Many historians guessed that they had been made by an ancient race they called Moundbuilders. Mounds surrounded by embankments or on hilltops were deemed forts—the sad evidence of vain attempts to fend off American Indians.

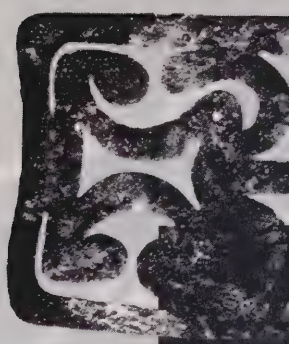
Throughout the late 18th and early 19th centuries, scholars dug into mounds of earth that were found from the Great Lakes to the Gulf Coast. Below many they discovered tools, ornaments, and even musical instruments placed with burials or in isolated caches. The technical and artistic abilities as exemplified by these artifacts were claimed to surpass those of modern craftsmen. With many artifacts from sources thousands of kilometres away, it was argued that the Moundbuilders controlled a vast trading empire. The most impressive mounds were vast squares, circles, and octagons standing in isolation along the river terraces of southern Ohio. They were joined by long parallel lines, arcs, and tangents of earth into nearly identical complicated figures. Such arcane earthworks, it was thought, must have had some role in Moundbuilders' ceremonies.

After digging a mound on his Virginia property, Thomas Jefferson became one of few to note cautiously that the bones and the tools of the Moundbuilders were not much different from those of Native Americans still living in less settled parts of the continent. This was not a popular opinion. Dozens of authors opined that Moundbuilders had come from Ireland, India, Carthage, or China. Few writers provided much evidence for their opinions and few readers demanded much.

In 1894 Cyrus Thomas published his "Report of Mound Explorations" in the *12th Annual Report of the Bureau of American Ethnology of the Smithsonian Institution.* After a decade of research he concluded that the mounds in different parts of the continent *all* had been built by Native Americans. The study of ancient North American mounds turned from the origin of their builders to their contents, their forms, and the nature of the far-flung societies that had created them. Many of those mounds contained artifacts similar to those found on a southern Ohio farm owned by Captain M. Hopewell. The Hopewell site, described in 1820, with one of its larger mounds dug into by 1848, gave its name to those elaborate walls of earth, the mounds, and to the artifacts they yielded throughout the mid-continent.

To mount a display of pre-Columbian artifacts at the World's Columbian Exposition, the Chicago tycoon Marshall Field commissioned an unemployed Ohio archaeologist, Warren King Moorehead, to excavate the Hopewell site in 1892. Below the larger mounds, in a square earthwork, Moorehead uncovered caches containing hundreds, even thousands, of nearly every type of exotic artifact, which were found in one or another mound scattered across the mid-continent. As the first director of the Ohio State Archaeological and Historical Society, Moorehead began a program of excavation to surpass that of the scholars who worked in Ohio from Harvard's Peabody Museum and the Smithsonian.

Once again many of the objects found were made from copper, silver, or mica. There were repoussé copper gorgets or plaques with geometric cut-outs and animal silhouettes, and fully modelled antler headgear. Many copper objects had eyelets to enable them to be sewn onto clothing. Geometric and zoomorphic silhouettes that could be sewn onto clothing or made into headless, limbless human torsos, heads, and hands had been cut from sheets of Appalachian mica. Thick mirrors of



**The first Europeans were puzzled by the mounds. Native Americans had no tradition of having built them. Many historians guessed that they had been made by an ancient race they called Moundbuilders**

An aerial view shows the serpent mound from southern Ohio. The copper cut-out is from the Mound City group. An illustration depicts a group of sepulchral mounds and a diagram charts the Hopeton earthwork.

MARILYN BRIDGES/COURTESY NATIONAL PARK SERVICE/COURTESY SMITHSONIAN INSTITUTION

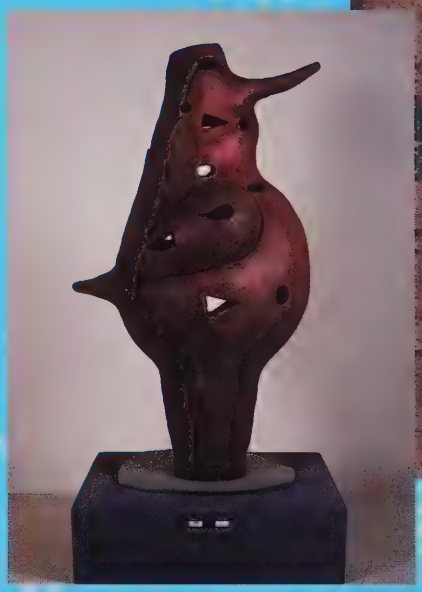
polished mica had been buried beside the far ends of long parallel earthen walls. Symbolic designs from copper and mica reappeared on carved bone pipes and ceramic pots.

Perhaps the most endearing of Hopewell artifacts were the human statuettes modelled of clay and the animal-effigy smoking pipes carved of the grey-green fireclay called Ohio Pipestone. Hundreds of those pipes were used, broken, then concentrated in two caches at sites within 50 kilometres of the source. Like the museum cabinets of those who first studied them, Hopewell mounds contained numerous natural curios: fossil shark teeth from the beaches of the South Atlantic or southwest Florida; lumps of meteoric iron; cones, hemispheres, worn crystals, and ground fragments of hematite and galena from the Missouri River valley; Pleistocene mammoth ivory from some unknown midwestern bog; a variety of unusual mineral crystals, alligator garfish scales; and even a ceremonially buried Roseate Spoonbill from the Gulf Coast.

An array of modern techniques are helping archaeologists to learn about and understand the Hopewell societies and their artifacts. Craftsmen replicate artifacts to estimate the effort required for their production and their possible use. Tests can pinpoint raw material or artifact sources so that transportation routes can be identified. Decades of preservation archaeology have exposed other economically independent societies which shared many ceremonial artifacts and types of behaviour with the Hopewell peoples of the Great Lakes and the upper Mississippi and Ohio river valleys.

Trade in artifacts is not new in North America. Since 1950 radiocarbon dating has revealed the time span during which artifacts were exchanged and mounds were constructed. Stone tools show that even 10,000 years ago Palaeo-Indians obtained raw materials from distant sources. Unfortunately, archaeologists have dated too few sites at which these and slightly later bands of mobile hunters and gatherers lived to know whether the different materials used and the styles of the artifacts are the result of change over the centuries or to their having been made at roughly the same time by different groups.

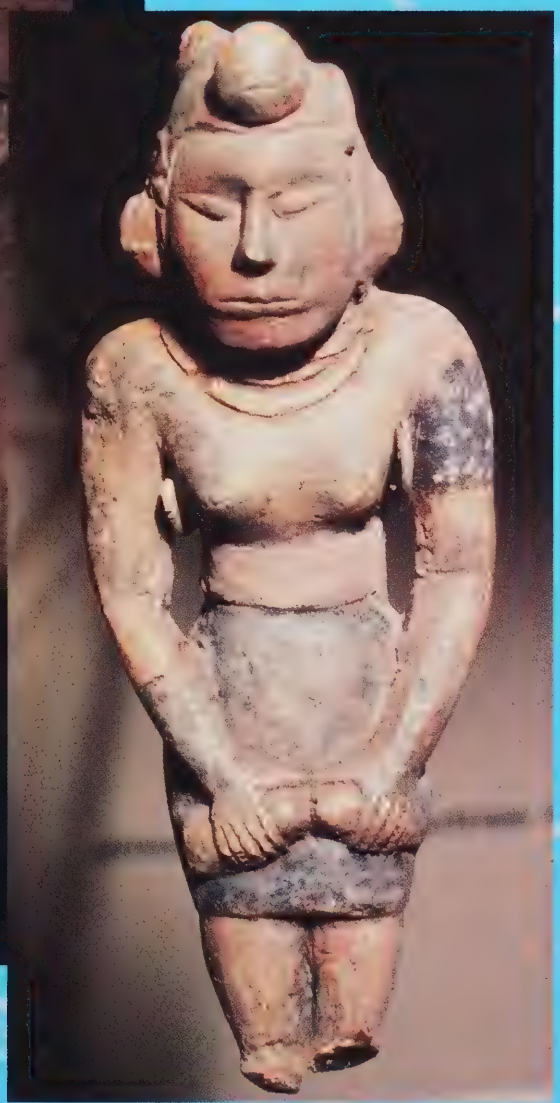
In the Great Lakes and Upper Mississippi River valleys, enough sites are dated from the period after 2500 BC to identify the differences in groups of artifacts that were created during this time. Archaeologists can infer social boundaries for growing aboriginal populations as they adapted to the changing world that followed the last Ice Age. It can be seen that the regional economies and local styles developed around 2500 BC were accompanied by an irregular exchange of tools and ornaments of Lake Superior copper or Gulf Coast shell. Across the region bounded by these sources, stone tools, ornaments, and even smoking pipes from outcrops in the Missouri and upper Ohio river valleys, and the northeastern states and Canadian provinces, began to appear in distant locations. Most of those artifacts ended their worldly journey as mortuary offerings, often in one of the small and relatively simple mounds built during the first few millennia BC. But during the period when Hopewell mounds were built, virtually contemporaneous with Imperial Rome, the repertoire of exchanged material and the ways in which the artifacts and the mounds were used, changed dramatically.



New excavation and re-excavation of Hopewellian ceremonial sites has revealed considerable variability in the nature and distribution of exchanged goods, and the size, configuration, and use of mounds. Most large ceremonial sites were used for generations. A few mounds had scores of burials, yet many ceremonial mounds had none, as not all members of Hopewell society received burial.

Artifacts used for subsistence were found only in small areas in Hopewell campsites and hamlets. From their studies of gift-giving and

**Thick mirrors of polished mica were buried beside the far ends of long parallel earthen walls. Symbolic designs from copper and mica reappeared on carved bone pipes and ceramic pots**



Postholes outline the structures below the mound at the Liberty earthworks, located just south of Chillicothe, Ohio. An exquisite translucent Ohio Flint Ridge ceremonial blade is from Painesville, northern Ohio. An ancient pottery figurine (c. AD 300), which looks like a modern sculpture, is from the Kolomoki mound "D," located in Bainbridge, Georgia. A female figure was found in the Turner Group earthworks in Cincinnati, Ohio.

COURTESY CLEVELAND MUSEUM OF NATURAL HISTORY/UNIVERSITY OF GEORGIA/DAVID S. BROSE/COURTESY PEABODY MUSEUM, HARVARD UNIVERSITY

ritual feasting in non-industrial societies, anthropologists are inclined to conclude that the artifacts of exotic style and material in Hopewell mounds were exchanged and accumulated as symbols of the unusual ritual status enjoyed by certain families or clan members in each regional group. These exchanges were not undertaken as trade; they served rather to maintain a variety of personal ties helpful for the maintenance or promotion of future social relations among the different groups and, indirectly, have very important economic consequences. This is not unlike the custom by which heads of state present gifts to one another at official banquets today.

Archaeologists long thought that large, complicated earthworks could only be built by a society that controlled large numbers of workers whose food was supplied by farmers. Because maize was the mainstay of the historic Native American diet, a factor that impaired health, most explanations of the spread and decline of Hopewellian ceremonial activity were based on the assumption that Hopewell peoples were maize farmers. However, nuclear and biochemical study of human remains did not reveal maize to be important to the Hopewell diet. Careful recovery of plant and animal remains shows that hunting, fishing, and gathering molluscs supplemented a diet based on acorns and nuts or oily and starchy seeds of grasses and carefully harvested squash. The few fragments of cobs or kernels of maize from mounds and campsites indicate that maize was only a rare and exotic garden plant rather than a food crop.

Some of the most interesting new studies are those that focus on the reasons why the elaborate geometrical earthworks were built. One of the first tasks of the Smithsonian's Mound Exploration program was to learn if Ohio earthworks were truly Euclidean forms. Henry Reynolds (who died while mapping mounds in the southeastern swamps, before he could write up his notes) directed detailed surveys from 1889 to 1891. They demonstrated that not all earthworks were quite what earlier writers had claimed or exactly what earlier engravings had shown. The 20- and 40-acre (8- and 16-hectare) circles and the 20-acre (8-hectare) squares were so remarkably close to perfect that their variances could have been caused by centuries of erosion. But the 40-acre (16-hectare) octagons' walls were not equal and did not meet at precise 135 degree angles. Breaks in the walls of octagons and squares were not in the centre of each side, and neither square walls nor long parallel earthworks that joined them really ran north-south, or even due northeast-southwest.

For the next century Hopewell geometricians were given poor grades. But publication of Gerald Hawkins's *Stonehenge Decoded* stimulated astronomical interest in all types of prehistoric structures even as Aubrey Burl's *Stone Circles of the British Isles* illustrated the need for geographic and chronological precision.

In the late 1980s studies by N'Omi Greber revealed that the off-centre breaks in the squares' walls at five similar Hopewell earthworks near Chillicothe were aligned to locations where the disc of the rising sun at summer solstice broke the distant horizon in the 2nd century AD. Earlier in the decade Ray Hively and Robert Horn had reported that several "imperfect" octagon segments of two Ohio earthworks lined up to the points where one could have marked the eight-year cycle in the apparent motion of Venus. They wondered if other walls might not have marked the 805-day cycle in which the moon shows the same phases in the same place in the sky.

My own earlier survey and testing of the long-ploughed Hopeton earthwork had noted that filled ditches, marking the former location of the long parallel walls, pointed just past northeast to a gap in the distant

hills at an elevation and angle where in the 4th century AD one would have seen, not the expected summer solstice sunrise, but the rising moon every 18.3 years. Because of the Earth's simultaneous motion around the sun, the 27.3-day sidereal month, in which the moon completes one revolution around the Earth with respect to the stars, is shorter than the 29.5-day synodic or lunar month, in which the moon completes one revolution around the Earth with respect to the sun. It takes 6585 days for the moon to return to exactly the same celestial position with respect to its nodes and perigee. The Hopewellian builders of the Hopeton earthwork were either the beneficiaries of an amazing coincidence or they had discovered that at intervals of 223 lunar months, the conditions that make for solar and lunar eclipses recur: a discovery that could have allowed ancient predictions of such events.

Why would any society of rudimentary farmers put such effort into marking the passage of time? How could a non-agricultural society spend enough time in the same spot to know the exact point where the moon would rise once every generation? There are no absolutely certain answers to these questions. It is not even clear that these are the correct questions to ask. Like the exotic raw materials and unusual objects the Indians collected or made, the geometric earthworks and the celestial events to which they were linked were connected according to the view of the world held by the Hopewell peoples.

People who have a mental sense-impression created through the stimulation of another sense are said to have a psychological condition called synaesthesia. They may hear tones and pitches in numbers they read or see colours in spoken words. This phenomenon was common in many recent traditional societies and in quite a few ancient ones. Colours, shapes, and ceremonies, life and death, landscapes and stars, days and months, plants, animals, and even gods are all carefully organized into a system that makes magical and religious sense once the relationships are known. Most Hopewell copper plates, geometric cut-outs, and head-dresses come from square earthworks positioned to relate to the rising sun. Perhaps these artifacts from the western lakes, now green with the patina of centuries but glittering fire when new and burnished by reverent use, allowed those who wore them to partake of the power of the sun itself. Many of the mirror-like mica discs and fragments of geometric mica cut-outs and silhouettes designed to be sewn onto clothing come from caches or burials situated along parallel walls oriented to lunar events. Did those who once bore these coldly glittering artifacts from eastern mountains dress to meet or control the moon? Caches at what seem to have been small earthen circles at the end of those walls at the Fort Ancient and Hopeton earthworks also yield spearpoints of white quartz or black obsidian. Were those spearpoints emblems of personal power or intra-regional family relationships in a system where all aspects of the social and natural world shared symbolic roles and responsibilities? Some questions asked by archaeologists cannot be answered in the laboratory.

And the serpent mound from southern Ohio to which Walter Kenyon looked for inspiration? Kenyon's own study confirmed that the serpent mounds on Rice Lake and the LeVesconte mound were constructed and used by Hopewellian-related people in eastern Ontario between 100 BC and AD 300. Although the serpent mound overlooking Ohio's Brush Creek was nearly dug away in the 1880s, recent investigations yielded charcoal and prehistoric ceramics from the base of the few remaining undisturbed areas. Radiocarbon dating and ceramic analysis indicate that those intact parts of the serpent could not have existed before AD 1000. If there was shared inspiration about building earthen snakes, it need not have been initiated from the south.

**A stamped ceramic vessel comes from Choctawhatchee Bay, Florida. Obsidian spear points from Yellowstone, Wyoming, were found at the Mound City group, Ohio.**

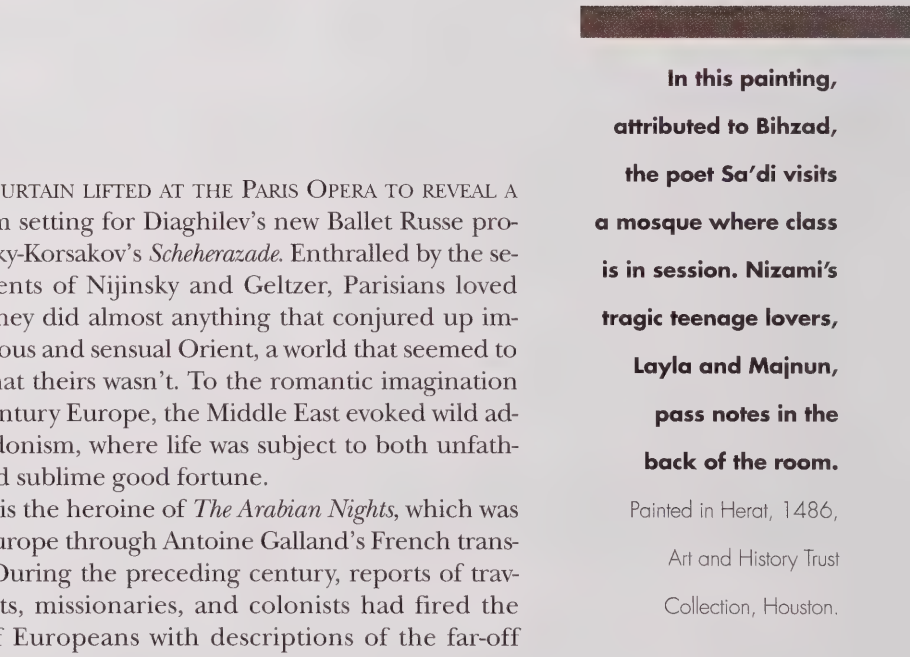
COURTESY TEMPLE MOUND MUSEUM, FORT WALTON BEACH, FLORIDA/ COURTESY NATIONAL PARK SERVICE

*To the romantic imagination of turn-of-the-century Europe, the Middle East evoked wild adventure and hedonism, where life was subject to both unfathomable peril and sublime good fortune*

# IN SEARCH OF SHEHERAZADE

## *Does East meet West through Sheherazade?*

LISA GOLOMBEK



COURTESY ART AND HISTORY TRUST COLLECTION

**In this painting, attributed to Bihzad, the poet Sa'di visits a mosque where class is in session. Nizami's tragic teenage lovers, Layla and Majnun, pass notes in the back of the room.** Painted in Herat, 1486, Art and History Trust Collection, Houston.

IN 1910 THE CURTAIN LIFTED AT THE PARIS OPERA TO REVEAL A steamy harem setting for Diaghilev's new Ballet Russe production of Rimsky-Korsakov's *Scheherazade*. Enthralled by the seductive movements of Nijinsky and Geltzer, Parisians loved *Scheherazade* as they did almost anything that conjured up images of a mysterious and sensual Orient, a world that seemed to be everything that theirs wasn't. To the romantic imagination of turn-of-the-century Europe, the Middle East evoked wild adventure and hedonism, where life was subject to both unfathomable peril and sublime good fortune.

Sheherazade is the heroine of *The Arabian Nights*, which was introduced in Europe through Antoine Galland's French translation of 1704. During the preceding century, reports of travellers, merchants, missionaries, and colonists had fired the imaginations of Europeans with descriptions of the far-off

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و مولودم پرسید گفتم خاک شیراز
گفت از سخنان سعدی چه داری گفتم
بلیت بخوی بصول مغاضباً
علی کریدفی مقابلة العسر
علی جرذیل لیس یرفع راسه
و هل یستقیم الزرع من عامل الجر

*King Shahriyar, devastated by his first wife's infidelity, has her put to death. To avoid such misfortune in the future, he decides to slay whomever he marries on the morning following the wedding night*

lands. In the 19th century, painters such as Delacroix and Gérome favoured Biblical scenes of violence and passion in Oriental settings. Neither photographs nor astute observers could subsequently wean Europe from its romanticized vision of the Orient. Not content to translate literally the famous tales, also known in English as *The Thousand and One Nights*, Richard Burton, in 1885-86, and a host of others paraphrased, interpreted, and embellished the originals.

Sheherazade figures only in the frame story for the tales. According to the story, King Shahriyar, an Indian ruler devastated by his first wife's infidelity has her put to death. To avoid such misfortune in the future, he decides to slay whomever he marries on the morning following the wedding night. After several of the finest young women in the kingdom are slain, Sheherazade, the vizier's daughter, devises a plan to end the bloodbath and volunteers to marry the king. As dawn breaks after their wedding night, she begins to spin a tale. The king is so fascinated that he postpones her execution. Night after night she presents new tales. Finally the king comes to trust Sheherazade and spares her life.

Over the centuries, tales from a multitude of sources came to be included in *The Thousand and One Nights* that we know today. During the height of their popularity in the Islamic world, the 13th and 14th centuries, there were only 11 tales covering 271 nights. In 19th-century Europe, *Aladdin's Lamp* was added, as were the stories of Sinbad the Sailor, which reflected the important maritime trade between India and the West.

India was the source of the frame story and many of the tales. However, before reaching Europe and the Middle East the Sheherazade story first travelled to Iran where it was translated into Pahlevi (Old Persian). In fact, the names Sheherazade and Shahriyar are Persian.

When Baghdad became the Islamic capital in AD 762, new stories were added to the collection focusing on the court of the caliph, Harun al-Rashid (AD 786-809). He joined the ranks of kings, who as legend has it, showed such dedication to his subjects that he wandered among them in disguise, searching out injustice. In the 13th and 14th centuries, the tales spread to and gained popularity in the Arabic-speaking world of Syria and Egypt. While Arabic was the language of religious discourse in Iran, Persian remained the language of both the street and the court. The story line of *The Arabian Nights* was picked up and transformed into stunning Persian poetry in the romance of the *Seven Princesses* by Nizami (1141-1209).

Foremost among the Persian poets, Nizami is often called the creator of the Persian love story (*Gelpke*). His work was imitated by poets for many generations in Iran as well as in India and Turkey. In *Seven Princesses* (*Haft Paykar*), a carefully constructed poem (*masnavi*) comparable in structure and length to Chaucer's *The Canterbury Tales*, Nizami tells the story of a Persian king, who was promised that once he came to power, he could marry the seven women portrayed on the walls of his palace. After seizing the crown, which was placed between two lions, the king prepares to wed the seven beauties, who arrive from each of the seven climes of the world. On successive evenings of the week, the king visits each of the women in her own, distinctively coloured pavilion, where he is told a tale that lasts through the night. Beginning on Saturday in the black

**Majnun, emaciated and sick with love, receives visitors at his desert home (here portrayed as a lush forest). Bedouin tents in the foreground are shown as elegant yurts.** Painted for a manuscript of the Silsilat al-Dhahhab of Jami, in northeastern Iran, c. 1575. Art and History Trust Collection, Houston.

گفت من آنگه رسم او خوری
منم آرام جان تو لیلی
به شاش پر فروبری
امیر جاودان تو لیلی
گفت رد
عشوه ای نگار فرزانه
ار بجز عشق تو نه ام من
آن جنان کرده ام خانه

*Sheherazade marries the king and as dawn breaks on their wedding night, she begins to spin a tale that so fascinates him he postpones her execution. Night after night she presents new tales*

pavilion, he proceeds to the yellow pavilion on Sunday, the green on Monday, the red on Tuesday, the blue on Wednesday, the sandalwood on Thursday, and finally the white on Friday. Each colour is associated with a planet and its astrological meanings. The stories move the reader from a state of despair, symbolized by black, to a state of joy symbolized by white. Although the influence of *The Arabian Nights* is obvious, the stories in Nizami's poems fit a tighter structure.

Princes and, occasionally, princesses, nobles, and amirs commissioned artists at great expense to illustrate in jewel-like miniature paintings scenes described in their favourite verses. These were added to beautifully handwritten books, bound in richly gilded and embossed leather covers. The paintings would only be shown to a privileged few. *Hazar Afsan* (*A Thousand Stories*), the Persian transliteration of *The Arabian Nights*, was very popular but its prose was considered a blend of high and low literature. To the collectors of fine books, poetry, the highest form of literature, was more desirable.

In the illustrated books, the complex, intricately woven tales of Nizami's seven princesses are complemented by equally intricate page design that includes lyrical rendering of imagery and rich ornamentation and colour. In spite of the many dramatic scenes in the stories, those chosen for illustration are usually the quiet moments between the king and one of the princesses. Sometimes a book contains only seven illustrations that are identical except for the colour of the pavilion.

The story of the princesses is part of a quintet of lengthy poems known as the *Khamsa*. One of the most popular poems in this group, set in pre-Islamic Arabia, describes the romance of two Arab teenagers, Layla and Majnun. Majnun's love for Layla appears to drive him mad. (Majnun means mad in Persian; the boy's real name is Qays.) The episode describing Layla and Majnun at school was a subject for the famous painter Bihzad, who illustrated the happenings of the classroom even though Nizami does not describe them in detail.

Nizami's poems remained among the favourite subjects of Persian artists for centuries. However, the style in which they were rendered changed. For example, a work of the late 16th century combines Bihzad's genre style with a show of lush vegetation, an image that was becoming pervasive in painting of the period. Majnun, emaciated and wearing only a loincloth, is visited in the wilds by Layla, whom he doesn't recognize: "Love has so filled my heart that there is no room left for the beloved." The bedouin encampment described by Nizami is transformed into a rich tent city with a gold-embroidered yurt (circular Mongol tent), filled with women and children who are busy spinning thread and chatting.

Many of Nizami's works were inspired by characters in the verses of the *Shahnama* (Book of Kings), which was equally popular as a subject for illustration. Based on history and legend, the epic was composed by Firdawsi at the beginning of the 11th century. Stories of the kings who ruled Iran before the coming of Islam run the gamut from courtly events to battles, romance, and tragedy. However, the most important hero of the *Shahnama* is not a king. He is Rustam, a figure who combines superhuman strength with dedication to justice. Rustam was born to Zal, an albino abandoned by his father who considered him unlucky. Zal had been rescued by the Simurgh, an extraordi-

**The fabulous bird Simurgh carries prey to feed her young. Sitting on the rocks is the abandoned infant Zal, who became the father of the famous Persian hero Rustam. A caravan in the foreground spots the infant.**

Painted for a manuscript of the Persian epic Shahnama of Firdawsi, for Shah Tahmasp in Tabriz, Iran, c. 1525. Art and History Trust Collection, Houston.

شکاری که نازکتر این کرد
که بی شیر مهمان سی جون مزد
برین گونه تا روزگار دراز
براورد و دارند بگشاد راز
جوان کودک خرد پرمایه گشت
بران کوه برکار روانها گذشت
یکی مرد شد جون یکی زاد سرو
برش کوه بیم و میانش جو غرو
بسام نریمان رسید اگهی
ازان بیکران پور مابرزمهی
بدونیک سر کرنماند نهان
نشانش پراکنده شد در جهان

*In the words of one recent translator, Sheherazade's collection of stories, The Arabian Nights "weaves the extraordinary into the fabric of everyday life." The tales have broad appeal in the East and West as does the art that is more or less derived from them*

nary bird. In a breathtaking image from a manuscript painted for Shah Tahmasp (1524-76), a ruler of Iran, a caravan spots Zal being cared for by the bird in the wilds. The depiction of the Simurgh was influenced by the image of the Chinese phoenix on silks and porcelains imported to Iran. Although the Simurgh or phoenix had become a common decorative motif in Persian art in the 14th century, here it is treated as a living creature with its own crying nestlings to feed.

At the beginning of the 17th century, European merchants, missionaries, and arms dealers introduced foreign goods that intrigued the powerful rulers of Iran and India. Western painting idioms, such as naturalism and perspective, influenced Persian and Indian artists. When the Persian painter Muhammad-i Zaman illustrated Majnun visiting his father, his style was quite different from the 16th-century portrayals of this subject. All of the elements of the composition have been manipulated to form a uniform image. The laws of perspective demanded that the foreground figures be larger than those in the middle distance and background. That is why a reclining camel rather than Majnun is the dominant figure in Zaman's painting. An architectural ruin and stylized landscape are other European touches. Yet in spite of the attraction of Western culture, the Persian love of poetry and its historical link to painting persisted.

By the end of the century, however, tradition was abandoned. European oil painting with all of its conventions had been fully adopted. Ironically, it was at this very time that interest in the Orient peaked in England and Europe, and *The Arabian Nights* found its way into Western parlours.

The search for Sheherazade in traditional Persian painting and in 19th-century and early 20th-century European art takes some interesting twists. Her influence is subtly hidden behind the structure of the classical Persian poetry that inspired very serene and lyrical Persian art; but it becomes overt in the creation of a romanticized, spicy, and quite distorted picture of a foreign culture in European art—from dance to literature to painting. An entertaining comparison illustrates these antithetical views of Oriental culture. An Austrian porcelain of a "harem girl" (c. 1925) in the ROM's European collection portrays her as scantily dressed and seductive. In the supreme love scene of the Nizami romance, the couple always appears contemplative rather than amorous. Women are always fully clothed and, in keeping with Islamic tradition, head, arms, and legs are completely covered.

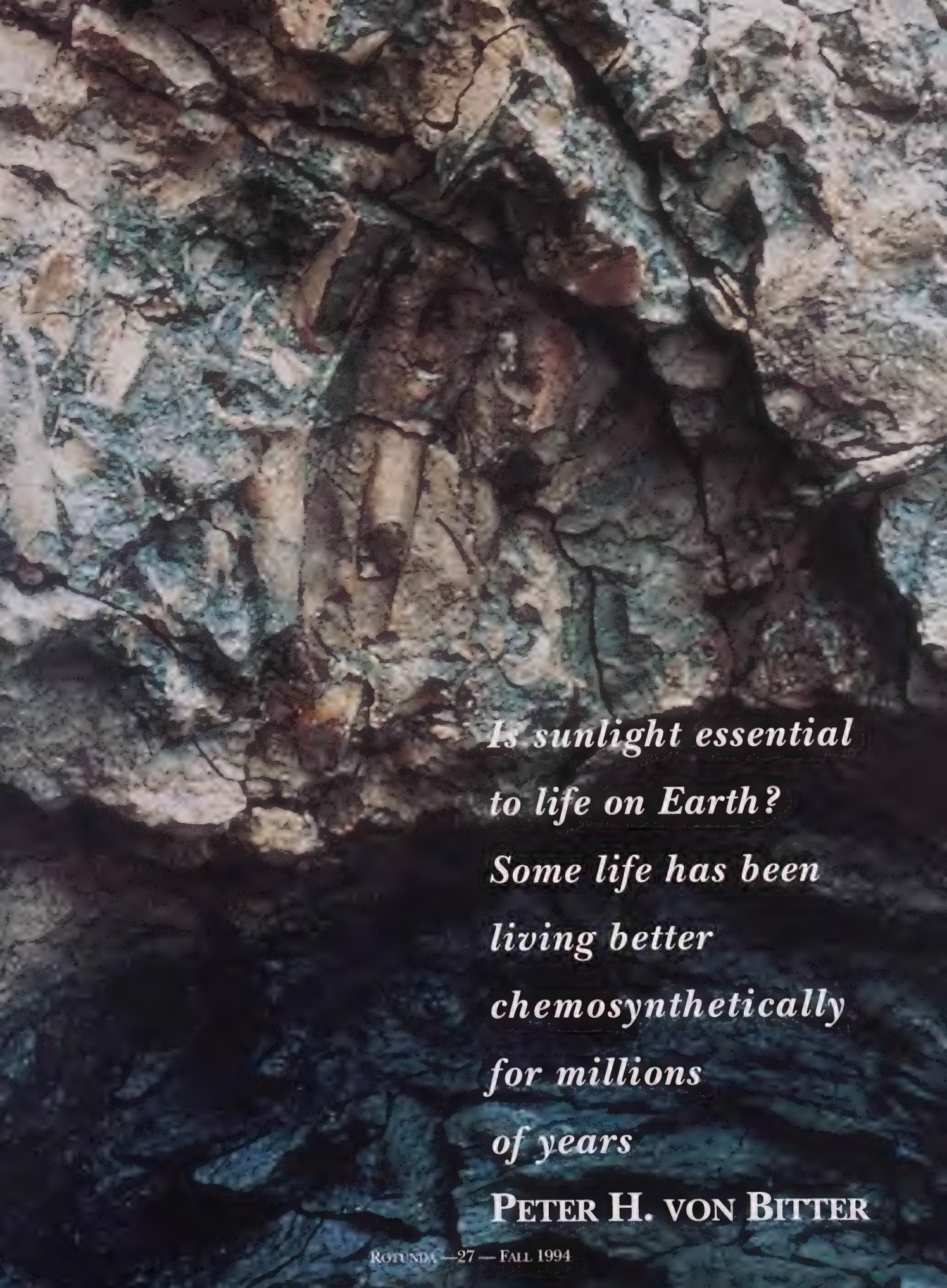
As Haddawy, a recent translator of *The Arabian Nights* commented, "It weaves the extraordinary into the fabric of everyday life." In spite of their differences, the Orientalist and Persian images are not only more or less derived from but have broad appeal much the same as Sheherazade's stories.

Art of the Persian Courts *is on display at the Royal Ontario Museum from 4 October 1994 to 2 January 1995. It is organized by the Los Angeles County Museum of Art and drawn from the Art and History Trust, an outstanding collection amassed by Iranian collector Abolala Soudavar*

**Rustam wrestles and subdues the White Div. Other demons throw rocks at Rustam to no avail.** Painted for a manuscript of the *Shahnama* in Tabriz, Iran, c. 1525. Art and History Trust Collection, Houston.

# The Sulphur Eaters

COURTESY WOODS HOLE OCEANOGRAPHIC INSTITUTION. PHOTOGRAPH BY J. FREDERICK GRASSLE



*Is sunlight essential to life on Earth? Some life has been living better chemosynthetically for millions of years*

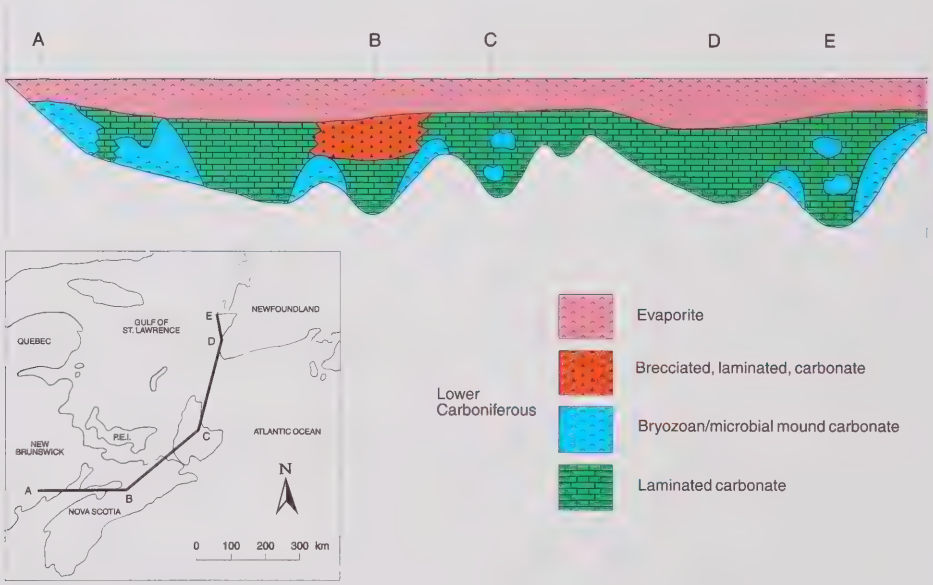
**PETER H. VON BITTER**

Preceding pages: (Left) Tubeworms with their red gill-like respiratory plumes are found at the Galapagos Rift off the west coast of Ecuador. They have been reported as long as four metres, and lack a mouth and digestive system. Food is acquired from sulphur-oxidizing bacteria concentrated within their bodies. (Right) Early Carboniferous fossil tubes in possible life position were found in Mistaken Cove, western Newfoundland. (Below) The chart shows the lowest Lower Carboniferous strata from New Brunswick (A) to western Newfoundland (E).

A DARKENED AUDITORIUM THAT RUMBLES and shakes each time a subway train passes underneath is an unlikely place to experience the high of discovery. My wife, Nancy Gahm, and I were at a ROM evening lecture listening to Steve Scott, a colleague from the Geology Department, University of Toronto and Director of the Scotiabank Marine Geology Research Laboratory, who was taking us deeper and deeper into an astounding new biological world that he had observed firsthand.

The underwater world that Steve was describing was first visited in 1977 by the research submersible *Alvin*. Scientists aboard were stunned to find a previously unknown biological community that exists—in fact thrives—in total darkness. Sunlight needed for photosynthesis, the energy source of most life, cannot penetrate through 2.5 kilometres of water. If the organisms living at these abyssal depths lack access to the energy of the sun, then they must be staying alive in some other way. The answer lies in the hydrogen sulphide or rotten-egg gas pouring out of cracks or vents on the ocean floor around which the biological communities live. Sulphur-oxidizing bacteria, which derive energy from the noxious substances spewing out from the Earth's interior, are the most important members of this community because they produce energy through an alternative life support system called chemosynthesis.

When Steve Scott showed slides of the most spectacular of the modern vent-dwellers, the metre-long, red-topped tube worms that are filled with hydrogen-sulphide-processing bacteria, I realized with a start that I had puzzled over similar tubes the previous summer. They were not in the depths of a far-off ocean but rather in 330-million-year-old Carboniferous rocks in a quiet cove in western Newfoundland. I don't suppose I will ever know how the connection was made. It may have been the similarity in shape between the living tube worms and the fossil tubes. It may also have been that I was reminded of George Dix's words in his 1981 Master's thesis: "The best analogy in form [of the fossil tubes] may be the large worm tubes that have been found near the Galapagos Rift." In any case an important step had been taken in linking modern and ancient life forms, which is one of the most important tasks for palaeontologists. Suddenly I had an idea of the kind of animal that might have made the fossil tubes collected in western Newfoundland.



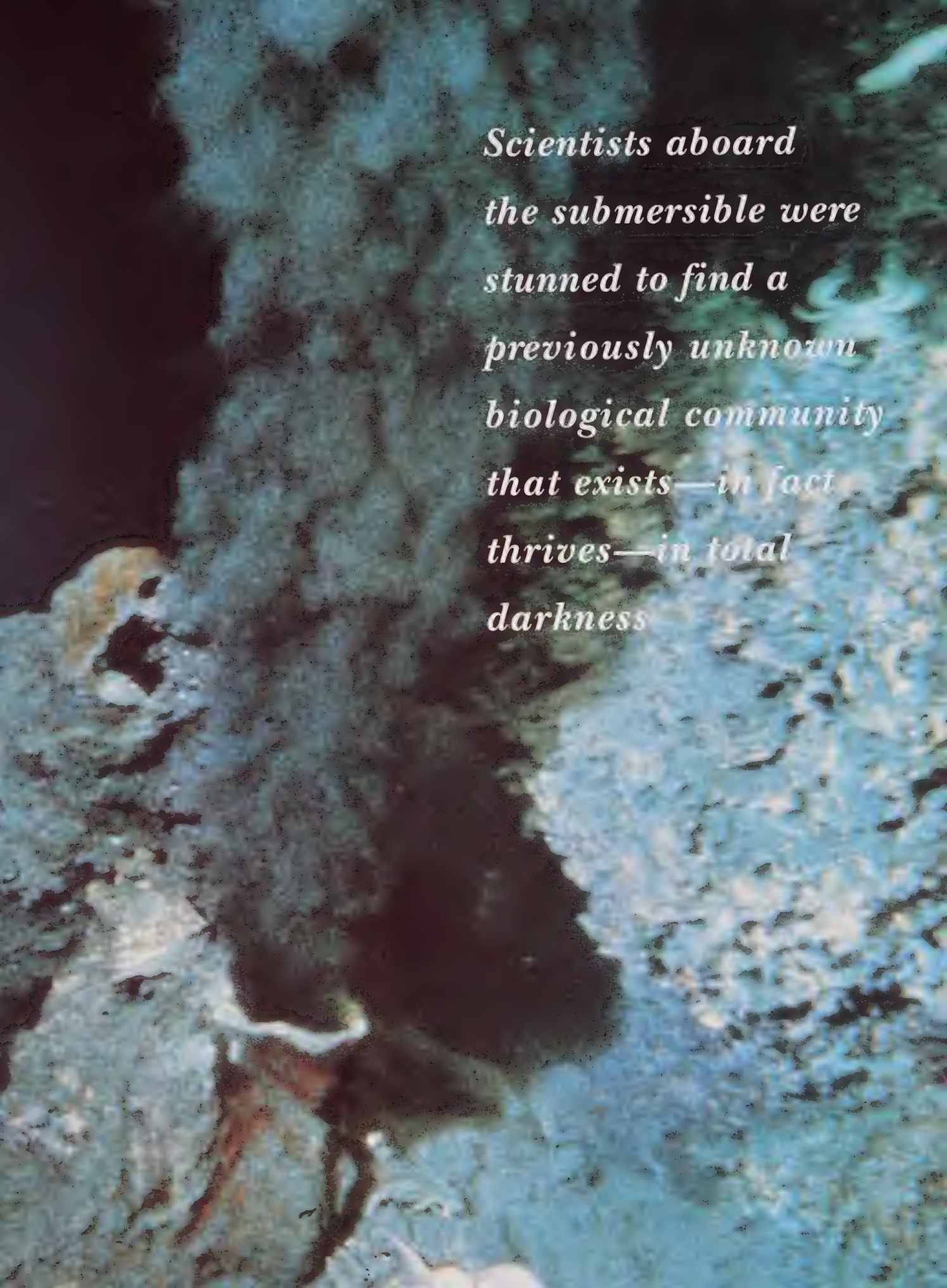

By the time Steve Scott's talk ended it was late and there was only time to invite him to visit my lab at the ROM to examine the specimens. When he came the next day, he quickly saw that the iron, lead, and zinc sulphide minerals contained in the fossils and in the rock in which they are embedded were very similar to minerals that he had collected from deep ocean vents. A few minutes later we agreed that only by working together could we properly explain what we saw in the ROM specimens.

Paul Schenk, a friend from Dalhousie University in Halifax, became the third member of our research team. As a young

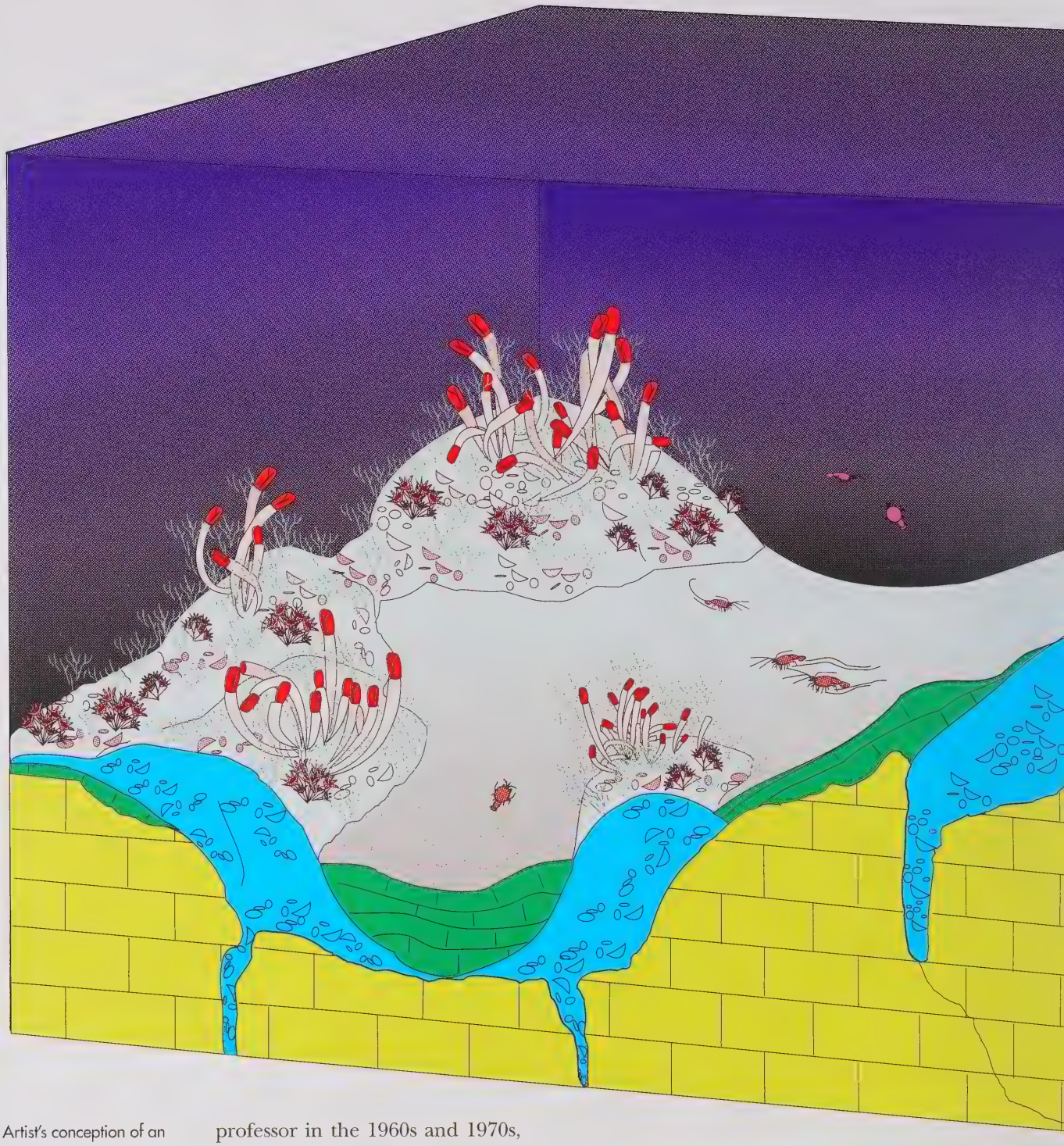
(Opposite) "Black Smokers" are chimneylike structures that spew out metal-rich minerals at temperatures as great as 350° C (650° F). Those illustrated here are located on the deep ocean floor off the west coast of Mexico. Part of the submersible *Alvin* can be seen in the foreground.

ILLUSTRATION BY PETER FENTON/ PHOTOGRAPH BY DUDLEY FOSTER, COURTESY WOODS HOLE OCEANOGRAPHIC INSTITUTION

*Peter von Bitter is a curator in the Department of Invertebrate Palaeontology, Royal Ontario Museum*



*Scientists aboard the submersible were stunned to find a previously unknown biological community that exists—in fact thrives—in total darkness*



Artist's conception of an Early Carboniferous vent community building carbonate mounds in western Newfoundland, fed by the chemicals spewing from the crevices below.

ILLUSTRATION BY MARIANNE COLLINS

professor in the 1960s and 1970s, he described the marine environments in which Carboniferous rocks from Nova Scotia and New Brunswick were deposited. The rocks and the environments were nearly identical to those I was exploring in Newfoundland. His explanations used available models that described deposition under shallow, sunny marine conditions with abundant photosynthesis. In other words, a sun-driven system. Paul had to wait until the deep-sea biological communities were discovered before he would see these rocks in a new light (or lack thereof).

It is wonderful to remember Paul's excitement when I was finally able to get him to western Newfoundland to look at "my" rocks. At one point, with his nose almost touching the cliff face in Mistaken Cove, he called out excitedly, "Where's the rock?" To me it was perfectly obvious that the rock was right in front of his eyes. Paul, however, was looking at how the carbonate mound containing the fossil tubes

had been built.
He couldn't see the mound skeleton or framework and the mound seemed to him to consist of little more than cavities filled with cement.

The hypothesis that we eventually came up with and presented in several scientific conferences and papers was of a rich biological community of marine organisms kept alive by chemical-processing bacteria. This community lived at depths of 100 metres or more, 330 million years ago, in Carboniferous seas of today's Atlantic Canada. Chemosynthetic bacteria concentrated wherever hydrogen sulphide was venting onto the ocean floor. Shell-bearing invertebrates able to feed directly on the bacteria, or able to utilize chemosynthetic

bacteria in feeding, colonized such vent sites. These in turn were eaten by mobile, shrimplike arthropods and fish—the higher part of the food chain. Vents were great feeding stations where the food supply was endless and where the bacteria did all the work.

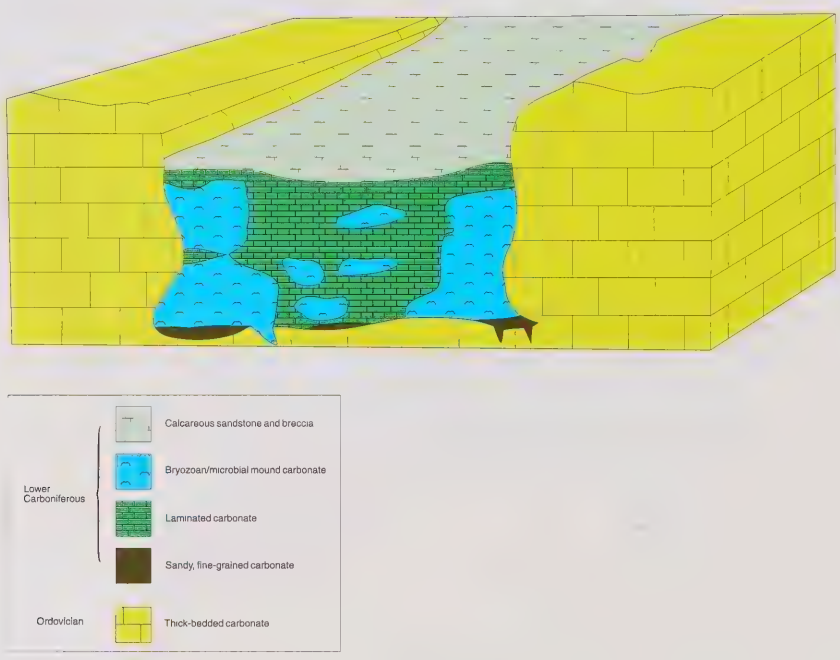
A measure of the success of this kind of forced feeding lies in the carbonate mounds, the underwater accumulations of billions and billions of calcareous skeletons of invertebrates—held together by bacterial cement—that accumulated from western Newfoundland to southern New Brunswick. Between vent sites, where the noxious but vital chemicals were less concentrated, large populations of invertebrates couldn't be supported and mounds did not develop. Instead, chemosynthetic bacteria utilizing lower concentrations of seeping chemicals precipitated laminated carbonates, the lateral equivalents of the mounds, all over Atlantic Canada.

We have found much evidence of bacterial activity: microscopic pellets, layered coatings, "oatmeal" textures and spectacular upward-growing bacterial "fingers," along with abundant, but low-diversity, invertebrate faunas of brachiopods, bryozoa, conularids, arthropods, and, of course, fossil tubes. That bacteria processed hydrogen sulphide is suggested by the abundant lead, zinc, and iron sulphide mineralization in the mounds in western Newfoundland and elsewhere in Atlantic Canada. At Gays River in central Nova Scotia, lead and zinc sulphides were found in mounds of the same age in sufficient quantities to be mined during the 1970s.

Carbonate mounds and reeflike carbonate bodies, common worldwide in geological strata of various ages, are of great importance for oil, gas, and metal exploration. The origin of many of these carbonates is being rethought. As our research has shown, rather than having been produced in shallow, warm seas by photosynthetic, sun-driven processes as geologists have traditionally thought, many carbonates may have formed under deeper water conditions controlled by Earth-generated processes. As these models are being applied to the geological record, and as the Earth's oceans continue to be probed by research submersibles, even our new understanding about vents and the biological communities that live around them is being modified.

Such communities are increasingly being reported from shallower waters, and they are living not beside hot vents, but rather beside more passive, lower temperature methane or hydrocarbon seeps. Chemosynthetic bacteria even support biological communities on the bottom of the Earth's deepest freshwater lake, Lake Baykal. Bacteria, associated with many newly discovered environments where methane or hydrocarbons are seeping, are able to obtain energy from these chemicals. These newer discoveries make it clear that available energy sources, rather than water depth, temperature, or salinity attract and support chemosynthetic bacteria, which in turn support new and startling food chains. Our ideas regarding the kinds of organisms that make up these communities are also changing. Only 17 years ago, vent communities were thought to consist

(Below) The diagram shows a generalized cross-section of Mistaken and other coves on the north shore of Port au Port Peninsula, western Newfoundland.




(Facing page) A fossil brachiopod "nest" found at Aguathuna, western Newfoundland.

ILLUSTRATION BY PETER FENTON/PHOTOGRAPH BY BRIAN BOYLE

mainly of specific kinds of bacteria, clams, tube worms, limpets, and crabs. Now it is known that not all vent and seep communities are the same. Species vary from one region to another on the ocean floor, and some communities, which comprise only a single species of clam or snail, are extreme in their lack of diversity.

Our ability to challenge established thought depends heavily on new discoveries. Those made aboard *Alvin* and other submersibles in the oceans of the world have confronted us with new environments in which complex organisms live rather well. These environments and their novel inhabitants have caused us to search the geological record for their ancient counterparts, and to use the knowledge gained from the living world to understand and interpret what we previously found in the geological record. The Carboniferous fossil vent communities of western Newfoundland are among the oldest and best preserved of those found to date. They demonstrate that chemosynthetic bacteria may have been keeping complex biological systems alive for hundreds of millions of years.

The extreme age of these environments and of their inhabitants may also change our perceptions about one of life's fundamental questions: where did life originate? Since 1953, when graduate student Stanley Miller, using an electrical spark, produced amino acids from a mixture of hydrogen, methane, and ammonia, it has been thought that larger and more complex proteins, important building blocks of life, could have formed from such amino acids in a periodically dried, shallow environment, such as a sunny tidal pool. That, however, was before chemosynthetic bacteria and their animal dependents were unexpectedly found in the ocean depths.

Some bacteria, including those growing beside vents and seeps, are among the most primitive organisms known. Perhaps these organisms didn't get their start by solar-powered processes in a rocky tidal pool, but rather by geothermal energy on the deep ocean floor. Perhaps bacterial chemosynthesis preceded photosynthesis and was the earliest way to stay alive in a Precambrian world with much volcanic activity and little sunlight.

And to think that all of these thoughts started in the darkened ROM Theatre.

The extreme age of these environments and of their inhabitants may also change our perceptions about one of life's fundamental questions: where did life originate?

# The Grace Notes of Everyday Life

*Floral arrangements in exhibits can add a special touch of realism*

Elizabeth Elliott

and Flavia Redelmeier

**A dried arrangement of colourful locally grown flowers enhanced the decor of an Ontario room exhibit in the former Canadiana gallery.**

FINE DETAIL, BE IT IN A PERFORMANCE, AN OBject, or a display, is something that most people find fascinating. It may be the intricate steps of a dancer, the workings of a superb clock, or the embroidery on a piece of fabric. In museum displays, fine detail can be the accessories that clarify and make more realistic the stories being told by the principal artifacts or specimens. At the Royal Ontario Museum, in the Chateau de Ramezay in Montreal, and in the Thorne rooms at the Art Institute of Chicago, floral arrangements add a carefully considered touch of realism to exhibits.

It is the ROM Decor Committee, a group of volunteers from the Department of Museum Volunteers, that is responsible for creating appropriate floral arrangements for permanent galleries, exhibitions,

and special events at the Royal Ontario Museum. Not only must the arrangements be historically accurate, but when they are placed where watering or frequent changes are not possible, they must be durable and pose no hazards to the artifacts.

Sometimes there are special challenges. For example, in the former Canadiana gallery, an oversized arrangement of dried grasses would flutter, thereby setting off the alarm system. Research showed that daisies, snapdragons, poppies, oleanders, and gladioli were the correct flowers for the opening of the Ancient Egypt and Nubia galleries; however, none of these plants conjures up the right image for the vast majority of ROM visitors. The compromise was to gild papyrus-shaped containers and fill them with calla lilies and gilded bul-

*Elizabeth Elliott and Flavia Redelmeier are members of the Museum Volunteers ROM Decor Committee*

HISTORIANS KNOW WELL WHAT THOMAS JEFFERSON PLANTED ON HIS 18TH-CENTURY ESTATE IN VIRGINIA. JEFFERSON RELIED HEAVILY ON THE EXPERTISE OF BERNARD MCMAHON WHOSE SEED CATALOGUES STILL EXIST

# Preserving Flowers and Fo

It's easy to save the garden's summer floral bounty in arrangements of small bouquets or nosegays for the fall and winter. Dried and preserved blooms maintain their beauty in the dry air of heated homes as long as they are not exposed to direct sunlight. Once the moisture of spring arrives, they droop and lose their vitality but by then fresh flowers are once again available to replace them. Here are some tips for preserving.

Stretch a laundry line across a warm dark space. Strip the leaves from flower stems and hang small bunches or individual stalks of peonies, roses (not white—it dries to an unattractive colour), double larkspur, delphinium, yellow yarrow, perennial baby's breath, lady's mantle, oregano, chive blossoms, and artemisia.

Cut and hang silver pennies as soon as the seed pods form and turn pale green. Shuck the pods later to reveal the silvery septa. Weeds such as dock, tansy, and goldenrod dry well if cut early in their blooming period. Seed pods of iris, poor-man's pepper, and milkweed (discard seeds before drying) add character.

Blooms of many garden flowers retain their shape and colour when dried with silica gel, but afterwards they must be stored in airtight containers so as not to rehydrate and spoil. Silica gel is expensive to buy but it can be re-used year after year by drying it in a warm oven. You can experiment with silica gel using a microwave oven in increments of 60 seconds.

To get the essential green look, press dry fern fronds between newspapers, under carpets, in telephone books, or between paper towels in a microwave oven. Branches of beech, apple, and bridalwreath can be hammered or slit and im-

# AGE FOR WINTER BOUQUETS

mersed in a solution of one part glycerine to 2.5 or 3 parts warm water. The stems will take up the glycerine and the leaves remain soft and pliable, although the bright green will soften and darken. Green heads of the hydrangea "Annabelle" should be cut before they fade to brown and stood in a dry container to retain colour. As Annabelle is a modern cultivar, it cannot be used in historical Museum bouquets; however, its bulky heads hide the thin stems of dried flowers very well.

The Victorian gardener admired the "Immortelles"—strawflowers, acroclinum, statice, pearly everlasting, xeranthemum, and gomphrena. The plants would be hung to dry until the stems stiffened, and then made into bouquets and wreaths of pale colours to frame poems and death notices. Modern tastes tend towards the brighter varieties. We wire strawflowers and hang-dry the rest.

Save the petals of fully opened roses and other garden flowers by spreading them on a screen to dry in the shade or in a warm attic. Once dry, store the petals in large biscuit tins. (Do not use plastic bags as they admit moisture.) Dry orange and lemon zests and fragrant herbs using paper towels and racks placed on top of the refrigerator. Mix the petals, zests, and herbs with lavender heads or commercial pot-pourri to add bulk and fixative properties. The mixtures can be placed in attractive bowls to add colour and fragrance to any room.

Extend your enjoyment of garden flowers throughout the year. You will have summery thoughts in the depths of winter and the promise of gardens and sunshine in the spring.

E. E. AND F. R.

rushes with a collar of bird-of-paradise at the base—more Sudan than Egypt.

Research can be conducted through many sources. Texts, paintings, decorative objects, and fabrics are the most common. Design based on plant forms may be purely decorative or it may have some symbolic meaning. Sometimes realistic, at other times abstract, the designs indicate what was available to and used by people.

For instance, historians know well what Thomas Jefferson planted on his 18th-century hilltop estate, Monticello, in Virginia. Jefferson relied heavily on the expertise of Philadelphia nurseryman Bernard McMahon, who forwarded the newest vegetable and flower varieties to him. Copies of McMahon's seed catalogues still exist; the catalogue of 1803 lists 720 plant species. Englishman William Robinson's late 19th-century texts on garden design and those written subsequently by Gertrude Jekyll on colour and variety of plant material are other references that are still widely quoted.

Ancient images of the lotus tribute-offering from early dynastic Egypt show a type of blue water-lily still present today. Famous for their elegant collars of lapis, the Egyptians also created elaborate floral collars of fruit, berries, and lily and poppy petals mounted on a papyrus grid. Palace walls at Knossos, Crete, display the madonna lily. Roses, which grow wild across the northern temperate zone, were treasured in Greece and Rome for their perfume and were strewn to honour athletes and heroes. A lively Roman mosaic of the 1st century AD, now in the Vatican, depicts a large basket of flowers including roses, hyacinths, carnations, anemones, and the wild tulip of the eastern Mediterranean. Peonies, peach blossoms, lilies, hollyhocks, and roses figure in Chinese embroideries and early ceramic wares traded to Europe.

Tall cones of closely tied flowers appear in Byzantine mosaics of the 6th century. Islamic ornamented manuscripts from about 1200 and mosaic tiles from about 1400 show gaily decorated vases with tall, airy arrangements mostly of carnations and roses. Oriental wool and silk carpets were first decorated with symmetrical patterns based on the tree of life with surrounding foliage. Elaborate Persian-garden designs were reproduced in foreign lands by Moslem leaders as they extended Islam as far west as Spain and as far east as India. As the Koran forbade depictions of animal and human

THE RENAISSANCE BROUGHT AN EXPLOSION OF COLOUR, SHAPE, AND REALISM TO THE RENDERING OF FLORAL ARRANGEMENTS. BY THIS TIME, FLOWERS WERE BEING IMPORTED FROM ALL PARTS OF THE KNOWN WORLD

**An arrangement of plants evocative of harvest time heightens the sense of comfort and prosperity portrayed in this re-creation of an Ontario German family's kitchen.**

forms, an elaborate system of plantings was created, which was copied in paintings, carpets, pottery, and eventually porcelains.

Vases of single or double blooms, usually lilies, were carved into elaborate 14th-century European church altarpieces. In paintings, the same floral motif had devotional attributes for viewers. Gold, silver, copper, and glass containers often outshone their floral contents, although simple pottery containers were used for humble interiors.

Documents show that mediaeval and Renaissance gardeners and housewives gathered herbs and simples for medicines, for seasonings, and for strewing on the earthern or stone floors. A posy of sweet herbs might be placed on a table near a sitter or in a bedchamber to enhance sleep.

Posies or tussy-mussies were carried to suppress odours or to guard against disease. Most gardens were a mix of vegetables and healing herbs; flower or ornamental gardens were luxuries of the gentry and few others.

The Renaissance brought an explosion of colour, shape, and realism to the rendering of floral arrangements. Elegant European tapestries of the 15th century depict elaborate branching and intertwining plants and flowers, especially roses, the symbols of royalty. Millefleurs-tapestry backgrounds show growing plants that have medicinal and mystical significance. Netherlandish still-life paintings massed together fruit and flowers of all seasons. These secular decorations sometimes included a reminder of the transient nature of life by incorporating insects and even skulls. By this time, flowers were being imported from all parts of the known world.

By the early 17th century, tulips, which

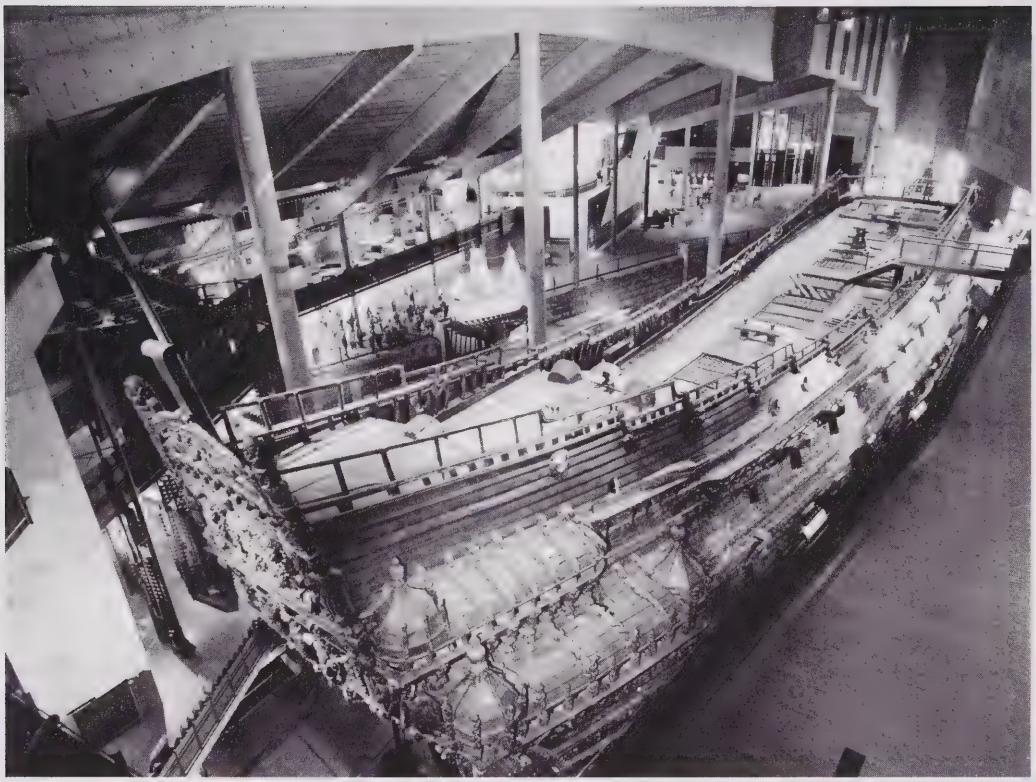
FLOWERS ARE, AFTER ALL, NOT JUST THE GRACE NOTES OF SPECIAL OCCASIONS BUT OF EVERYDAY LIFE

originate in the highlands of Turkey, were being hybridized and passionately cultivated in Holland, as well as being widely distributed. The gardens of Louis XIV at Versailles had ever-changing displays of thousands of potted plants. Forcing of bulbs and tender plants in an orangerie or stove house increased the range of possibilities and promoted the search for exotic materials. Containers were also subject to exotic influences as porcelains imported from the East or copied from Chinese prototypes were adapted by the English to Georgian tastes. They accented architectural niches and gracefully proportioned rooms with carefully balanced floral displays.

With the development of the Wardian Case, a portable greenhouse container, in the early 19th century, it became possible to ship live plant material from as far as South Africa and Australasia. The introduction of numerous plants excited the Victorian love of novelties. Victorians and their French and German counterparts developed myriad new colours and varieties of plants. Table decorations made of hothouse plants, as well as the trend to colourful and extravagant carpet bedding of tender annuals came about because of the creation of glass-and-iron-structured greenhouses heated by coal-fires. Books on botanical subjects and journals for women illustrated newer, rarer, bigger, more colourful, and more floriferous plants.

Following the trend to large, more colourful, whimsical arrangements, containers were created in more fanciful forms, as expressed in the epergne or many-sectioned table centrepiece. By the mid-19th century, cut-glass containers were being crafted in oversize, heavy styles, especially by glass factories in the United States. The trend today is towards a less-composed look, a freedom of expression in soaring heights and contradictory planes.

The exciting South Wing of the ROM's Samuel European Galleries opens this fall with vignettes devoted to the mediaeval, Renaissance, baroque, rococo, neoclassical, Victorian and post-1890 eras. ROM Decor has put together seven teams to research appropriate florals and fruits for the displays. The final arrangement will be placed in appropriate containers from the European collections. Texts are also being prepared to provide information to visitors. Flowers are, after all, not just the grace notes of special occasions but of everyday life. ❦



*The* **Vasa** *now resides in her own museum.*

# The Vasa Museum, Stockholm

In the late afternoon of 5 August 1628, the great Swedish warship *Vasa*, the pride of King Gustavus II (Adolphus), left Stockholm harbour on her maiden voyage. The flagship of the Swedish navy, she was built from the timber of 1000 oaks and equipped with 64 of the latest guns. She was the largest and heaviest warship of her day, measuring 69 metres in length, with a displacement of 1210 metric tonnes, and was an object of admiration to all who saw her. However, on that day as the *Vasa* set sail, a sudden gust of wind caused her to heel over when she was a mere 1300 metres out of port. Water rushed in through the gunports, and she quickly sank, drowning nearly one-third of her crew of 145.

More than 300 years later, the *Vasa* was finally salvaged. Although attempts to recover the *Vasa* were made in the 17th century, it was not until 1956 that the engineer Anders Franzén located the wreck, and in 1961 she was brought to the surface with much of the hull still intact. Today the *Vasa* is one of the world's most significant and complete shipwrecks.

Unlike other wooden vessels that have spent prolonged time underwater, very little of the *Vasa* was lost. The reason for this is simple: the wood-destroying shipworm, *Teredo navalis*, which thrives in salty water, is not found in the Baltic. However, the centuries spent at the bottom of Stockholm harbour caused some structural damage, and the wood was so water-logged that the *Vasa* had to undergo special treatments in order to preserve her. For the next 17 years, the hull, some 500 carved wooden sculptures, and more than 10,000 fragments were sprayed with a polyethylene glycol solution to prevent the wood from cracking and splitting while drying.

During those years the *Vasa* was housed in a temporary museum. In 1990, she was moved into a new museum, designed by Swedish architects Marianne Dahlbäck and Göran Mansson. This distinctive concrete building, with its tent-like copper roof and stylized masts, which reproduce the height of the upper sections that are missing from the *Vasa*, is located within Stockholm harbour at Djurgården, across from the site where the ship was built more than 350 years earlier.

It is not surprising to learn that

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this unique museum receives more visitors than any other in Sweden (in its first year alone, more than 1.1 million people came to see the *Vasa*). Its galleries are of interest not only to historians of nautical technology, but to visitors eager to explore aspects of the life of the period, from food and entertainment to ship iconography and naval warfare.

Displayed under dim light, the *Vasa*'s great hull of darkened wood quietly glows. The wood emanates a faint but pervasive scent of old smoke and tar. Several levels of galleries encircle the ship, making her a grand centrepiece in a museum that stresses openness and accessibility. The purpose of the design is twofold: to have the ship immediately capture the visitor's attention and to allow her to be seen from every exhibition space. Because the museum's sophisticated air-conditioning system keeps the environment at a constant relative humidity and temperature, the ship can be set in the open, allowing the visitor to see close up every detail from keel to elaborately carved sterncastle.

With the *Vasa* as the main focus of the museum, the galleries interpret various features of the ship and the period in which she was built. Artifacts found with the ship highlight details of her construction, and reveal aspects of life in early 17th-century Sweden. A full-sized reconstruction of the upper gun-deck gives visitors an idea of what it would be like to be aboard a 17th-century warship. The galleries also deal with some unpleasant topics. A sailor was more likely to die from poor diet, a disease, or generally bad conditions onboard ship than from being in battle. Cruelty was also a part of the seaman's life, and the threat of keel-hauling was a common means of keeping the crew in line. For this punishment the offender was hoisted up to one of the ship's yards (spars) by a rope tied to his ankles, and then dropped head first into the water. Another rope pulled him to the other side of the ship, under the keel. If this ordeal did not kill

him, chances were that in time the injuries sustained from scraping against barnacles would.

The Vasa Museum is unique in its use of computers. Sponsored by IBM, the "Computer Adventure" allows visitors access through two different programs to a large amount of information compiled about the ship. Using film, still photographs, and sound, "Close-up Vasa" tells the history of the ship, shows details of its form, salvage, and restoration, and provides information on ship life. With "Sail the Vasa," the visitor is invited to become a ship designer by manipulating such elements as hull shape, rigging, amount of ballast, and number of guns, in an effort to understand why the *Vasa* sank. Although there were a number of factors that contributed to the *Vasa*'s instability, the large number of guns requested by the King made her top-heavy, and therefore easy to topple in a strong wind. The computer program allows these newly created ships to be tested either by simulating the effects of gusts of wind, or by employing a method used in *Vasa*'s day: having 30 men run back and forth across the deck to check the stability. The computer then analyses the ship's performance, and provides a printout of the results.

Not wishing to have my creation suffer the same fate as the *Vasa*, I purposely designed a very stable ship by broadening the hull, increasing the ballast, and decreasing the heavy guns on the two upper decks. My vessel was declared to be good in combat, very stable, but also very slow. I was also informed, much to my relief, that my ship had "a better sailing performance than the *Vasa*. The King is satisfied with the ship's fighting qualities. You can keep your job."

---

CATHERINE PAGANI
*Catherine Pagani is an assistant professor in the Department of Art, University of Alabama, and the 1994 Gervers Fellow of the Textiles Department, Royal Ontario Museum*

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# ROM Answers

**Dear ROM Answers,**
I received my spring issue of *Rotunda* yesterday and—surprise, surprise—there was your reply to the British Columbia readers about their "Royal Furniture" sideboard.

In 1960 or 1961 my wife and I attended an auction at the Ward Price Galleries on College Street in Toronto. That particular evening they were auctioning off part of the estate of the Thorn family of Forest Hill. One of the lots was the master bedroom suite, which consisted of twin beds, a bedside table, a man's highboy, a lady's vanity, a lower dresser, and two large oval plate-glass mirrors. The suite was identified by a brass medallion recessed into the side of each drawer as "Royal Furniture" made by Robert W. Irwin.

At the auction the auctioneer stated that the suite, which we ended up buying, was purchased by Dr. Thorn at the Chicago World's Fair in 1893 and was made in Grand Rapids, Michigan. It purported to be part of the Robert Irwin Furniture Company display at the fair.

We used the suite on a day-to-day basis for about 30 years and disposed of most of the pieces in 1990 at Waddington's, prior to our move to Newfoundland. However, we were particularly fond of the vanity, which we have kept. By the way, you are right about the finish. Our piece has a "French polish" shellac-based finish that is soluble in methyl hydrate.

I thought that you, or the B.C. reader, might be interested in knowing that other readers of *Rotunda* also own "Royal Furniture."
Yours sincerely,

J.H.B., St. Michael's, NFLD

**Dear Reader,**
Thank you for writing to me about your bedroom suite of "Royal Furniture" made by the Robert W. Irwin Company of Grand Rapids, Michigan. It is good to know that other examples exist and to hear evidence that tends to confirm my impression that the sideboard owned by the couple in British Columbia is of very high quality. Although I am only judging from the polaroids of your dressing table, I think that your bedroom suite was likely of equally high quality and is also distinguished by fine marquetry (decorative patterns of wood veneer). It is too bad that you sold the rest of the bedroom suite, but I can appreciate that the costs of moving it all to Newfoundland probably would have been extremely high.

The one thing that I would query about your information is the date of the Chicago exposition. The shape and decoration of your dressing table and, to a lesser extent, the choice of veneer with a fine intricate grain are all typical of the Art Déco style. This style was named for the Paris exposition of 1925 and did not appear in the United States until the 1920s. Even the drawer construction shown in your polaroids suggests to me a date after World War I. My guess is that your bedroom suite could have been shown at the Century of Progress Exposition in Chicago, 1933-1934. This event attracted 48,769,227 paid admissions and was scheduled to celebrate the centennial of the founding of Chicago. A finely crafted bedroom suite in the latest and smartest Art Déco style would have been the ideal choice for such an important exposition. It would also have been the ideal souvenir for a wealthy doctor. Understandably, most people think of the World's Columbian Exposition (1893) when they try to recall world's fairs that were held in Chicago, so it is easy to understand the confusion about the date.

Thank you for writing to me about your "Royal Furniture." We are always pleased to hear from the readers of *Rotunda*. You are the ones who make this publication worthwhile for all of us here at the ROM.

Peter Kaellgren

*If you possess furniture, silver, glass, metalwork, ceramics, textiles, or small decorative objects that may have an interesting past and have aroused your curiosity, this column is for you. Send a clear black-and-white photograph (or 35-mm colour slide) of the object against a simple background, providing dimensions, a description, any markings, or any known details of its history to: ROM Answers, c/o* Rotunda Magazine, *Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario, M5S 2C6. Be sure to enclose a stamped, self-addressed envelope large enough to include any photos that we must return to you with the reply.*

*Neither* Rotunda *nor the author nor any other person who may be consulted assumes any legal responsibility for these opinions or their ramifications. No financial appraisals will be offered. If your query is selected to be published in the column, only your initials and city will appear, in order to protect your privacy. Letters will be acknowledged as staff time comes available.*

# Exploring Antarctica, and More

ANTARCTICA IS HOT. INTEREST IN THE last continent to be discovered has never run higher than it does today. This strange land has become, by default as well as by design, the last unspoiled spot in the world. It is also, therefore, one of the most precious and one of the most closely monitored. These facts are attested to by such ongoing public issues as concern about the ozone layer and by a rush of new books on various aspects of the place. Four of them in particular stand out.

We tend to associate the exploration of Antarctica with the British naval hero Robert Falcon Scott, who perished there, and with his more successful Norwegian rival, Roald Amundsen, who beat Scott to the South Pole in December 1911. But T. H. Baughman's book **Before the Heroes Came: Antarctica in the 1890s** (University of Nebraska Press, $US22) reminds us of all the exploration, intrigue, and competition that built the momentum necessary to launch the heroic "race to the Pole." In the 1770s, a French expedition "sailed in the hope of finding a southern continent in a temperate zone...on a mission to establish commercial relations with the natives of the southern land, a region that, it was hoped, would provide some compensations for the recent loss of Canada." From that point forward, Antarctica kept being rediscovered and then forgotten again.

In 1820-21, for example, it was sighted three times—by Americans hunting whales, by Russians wishing to expand their empire, and by Englishmen seeking other more general commercial advantage. In a way, its fate was always linked to that of its polar opposite. When Captain James Clark Ross, a Scot, reached the North Magnetic Pole in 1831, he demonstrated that the South Pole was also crying out for attention. Indeed it was the same Ross who went on to show that "a great land mass exists below the Antarctic Circle" (though he wasn't able to determine whether the mass was a continent or a collection of islands). Like virtually every other big development in the far north, the tragic loss of Sir John Franklin's Arctic expedition, which Ross went in search of, caused ripples in the far south.

At one point, the British hoped to build an Antarctic sealing industry based in Australia, but "by the late 1830s the population of seals had been largely depleted, and the sealers abandoned their efforts in the South for the next 40 years." Not so the whalers, particularly the American ones, who in time drove out the British and others.

Almost from the beginning, then, commerce was as much a driving force as scientific inquiry. The two motives were tied inextricably, it seems. After "geographers satisfied themselves that Antarctica was not fit for colonization, the continent attracted little attention until sufficient scientific interest crystallized." Science effectively took over in the 1890s—hence the significance of Baughman's subtitle.

The so-called golden age of polar exploration has been chronicled repeatedly but never before from the angle, and seldom with the style and vigour, of Dean Beeby, whose book **In a Crystal Land** (University of Toronto Press, $29) tells the story of Canadian involvement in Antarctic exploration. Beeby relies on primary documents (and even a few aged voices) to tell how explorers of the southern pole often drew on Canadians because of their cold-weather experience and specialized scientific and geological knowledge, not to mention their survival skills. Sometimes they were listened to, at other times not. One Canadian, Charles Wright, was expelled from Scott's last expedition for raising doubts that turned out to be all too well founded. Another, Herbert Hollick-Kenyon, ensured the success of the first flight across the Pole in 1935. Neither of these, nor any of the others Beeby has researched so meticulously and written about with perfectly restrained zest, is well known today. Possibly this attitude has to do with the fact that Canadians themselves are so prejudiced in favour of the Far North.

Sir Ranulph Fiennes is one of those quaint-sounding people, a professional explorer. He writes in **Mind over Matter** (Reed Books Canada, $29.99) of the trip he made with Dr. Michael Stroud in 1992-93. They travelled overland across Antarctica on foot and skis, pulling all their supplies behind them, unsupported by anyone outside except a radio operator with whom they stayed in contact. From Gould Bay on the Weddell Sea, they spent 97 ever-more-harrowing days getting across ice fields, glaciers, and mountains, to reach the Pole and emerge at the Ross Sea: a distance of about 2700 kilometres.

Increasingly, such adventures seem out of place in a continent that is governed by international treaties that have tried, not altogether successfully, to keep Antarctica pure and unspoiled. Indeed, the community of nations has recently agreed to do no more work there for the next 50 years, to allow Antarctica to cleanse itself. Such, we know now, are the implications of

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Antarctica for humanity's continued success on Earth. Daniel Snowman discusses these issues, and compares the two Poles politically, economically, and environmentally, in **Frozen Future: The Arctic, the Antarctic and the Survival of the Planet** (Random House Canada, $28.50).

MANY *ROTUNDA* READERS ARE NATURALLY interested in museology. In that spirit I call their attention to Kristie C. Wolferman's book **The Nelson-Atkins Museum of Art: Culture Comes to Kansas City** (Scholarly Book Services, $41.95). The Nelson-Atkins, which is particularly rich in pre-20th-century European painting, in Chinese art, and in the decorative arts of several cultures, was opened in 1933, inspired somewhat by other midwestern institutions such as the Cleveland Museum of Art. The timing was certainly dismal for cultural institutions and almost everything else. That the Kansas City social and financial elite could build such a large and important piece of cultural infrastructure from scratch in the worst year of the Depression was due to the way they formed a coalition and held it together, so that boosterism was turned to good account and a tradition of philanthropy encouraged to take root. Wolferman's book is about the Nelson-Atkins collections but it's also about the evolution of cultural politics in a totally private-sector environment.

I can't leave the subject of museums without mentioning **The Black Museum—New Scotland Yard** (Little, Brown, $20.95) by Bill Waddell, the retired curator of this famous and sometimes ghoulish institution. The Black Museum is reaching out more and more beyond the international police community while broadening its scope to show the evolution of scientific crime-solving techniques, such as DNA-printing. Waddell is still duty-bound, however, to devote some attention to figures such as Jack the Ripper, who continues to intrigue and to repel.

SOME OTHER NEW BOOKS OF SPECIAL interest:

• **Discovering Ancient Egypt** by Rosalie David (Canadian Manda Group, $28.95) is several books in one. It's a detailed and descriptive listing of all the relevant and important archaeological sites, written with the educated lay reader in mind. It's also a short (but not too short) history of ancient Egyptian civilization, and the story of people's fascination with it. Egyptian civilization is perceived as a quite separate and distinct curiosity, not necessarily related to Egypt's biblical associations or its place in the story of the Middle East generally. The fascination with Egypt was heightened rather than diminished when, after 1500 years of puzzlement, the secret of hieroglyphs was unlocked, revealing most ancient texts to be not religious or philosophical or mathematical but mostly about everyday life. Thus a useful companion book for the Egypt-bound traveller (or ROM visitor for that matter) is **Understanding Hieroglyphs** by Hilary Wilson (Key Porter, $32.95). It is generously illustrated and intended as something to read as well as to study.

• **The Best of Ascent: Twenty-Five Years of the Mountaineering Experience** edited by Steve Roper and Allen Steck (University of Toronto Press, $33.95) is an anthology of *Ascent*, the Sierra Club's mountain-climbing annual, which has just celebrated its 25th anniversary. This is travel-writing of a most specialized kind, full of reflection mixed with moments of terror and exhilaration. The anthology includes a cumulative index of the journal's quarter-century. Mountaineering has increasingly become a pursuit for women, and another anthology—Rachel da Silva's **Leading Out: Women Climbers Reaching for the Top** (Raincoast, $22.95) collects articles and essays by more than two dozen female alpinists from around the world, including several Canadians, such as Lorraine G. Bonney, Cyndi Smith, and Janet Rodden.

• In **Green History** (Routledge, US$81.50 cloth, US$24.95 paper), Derek Wall, a British environmental activist, has put together a most useful anthology to illustrate that public concern with ecological problems is not simply a contemporary phenomenon but rather one with deep roots in the history of literature and even in classical antiquity. He has found some amazing articles and excerpts, not simply the famous ones such as John Ruskin's writing on industrial pollution in the English Midlands or Prince Kropotkin's remarks about the human toll wrought by the Industrial Revolution. Thematic groupings range from the familiar (the spirituality of the natural world) to the ostensibly newer (eco-feminism) and the more overtly political (green revolutionaries, past and present). A most worthwhile selection.

• **Sweet Maple: Life, Lore and Recipes of the Sugarbush** by James Lawrence (the founder of *Harrowsmith*) and Rux Martin (Firefly, $29.95 cloth, $19.95 paper) is a highly readable social history of maple sugar and the business of sugaring-off, illustrated with all manner of archival images and some most striking contemporary photographs. One of the better examples of the country-living type of book I've seen recently.

• **The Canadian Home: From Cave to Electronic Cocoon** (Dundurn Press, $39.99) is a somewhat unusual and rather useful book. Marc Denhez, the author, tries to write a survey, not of Canadian architecture or Canadian construction or Canadian interior design, but of all of them together—Canadian habitation in all senses—with special reference to the ways politics and finance have affected taste through the years. He is particularly careful to discuss fully the various aboriginal housing traditions. A much more serious book than it looks, though just as readable as it initially appears.

• There's always room for a new biography of John James Audubon (1785-1851), author and artist of the extraordinary *Birds of America* and still the most important painter of North America wildlife. That's because he possessed in some smaller way the timeless genius of Leonardo: the joyful ability to reconcile scientific inquiry with the artistic impulse to produce a distinct third force. He was not necessarily a nice fellow, as Shirley Streshinsky shows in **Audubon: Life and Art in the American Wilderness** (Random House, $32.50). He was born in Haiti as Jean-Jacques Audubon, possibly the son of a French slave-trader. Audubon emigrated to America from France in order to escape the Napoleonic wars only to make himself into a tiresome mythomane and self-promoter, a shameless seeker of aristocratic patronage on two continents. If his life of frontier bombast now seems impossibly remote, and embarrassingly like Davey Crockett's, his work has never been held in greater esteem.

• In **Pauper & Prince: Ritchey, Hale & Big American Telescopes** (University of Arizona Press, US$45), Donald E. Osterbrock tells the story of George Willis Ritchey (1854-1945), who built America's first large reflecting telescopes, notably the one at the Mount Wilson Observatory in California, and of his singularly American type of collaboration with George Ellery Hale (1868-1938), a kind of observatory impresario and scientific fundraiser extraordinaire. Ritchey had a stunning but stormy career, and eventually he and Hale fell out. Osterbrock doesn't leave out the personalities in this serious work on astronomical history.

• **The Wedding in Ancient Athens** by John H. Oakley and Rebecca H. Sinos (University of Wisconsin Press, US$40) uses vase paintings as the primary source (and literature as a secondary one) to piece together and interpret matrimonial traditions in Hellenic society from the sixth to the fourth century BC. There are 130 photographic plates, many of them full-page but all, alas, are in black-and-white.

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DOUGLAS FETHERLING
*Douglas Fetherling is book review editor of* Rotunda.

# The Scent of a Warrior

ONLY 6.3 CM HIGH, THIS SMALL HEAD-VASE IS EASY FOR VISITORS TO MISS AS they tour the ROM's Greek and Roman galleries. Made of painted clay and dated to c. 590 BC, the head in its modified Corinthian helmet may have served as a container for perfume. Was the vase made for a man or a woman? This small fascinating object is one of thousands of reasons for anyone visiting museums or galleries to look again.

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